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Higher Education and the National Purpose
J. KENNETH LITTLE

The Proper Relationships between State Governments and State-Supported Higher Institutions
A. J. BRUMBAUGH

Other Articles by
Asa S. Knowles, Joseph M. Ray, Ben Euwema, John W. Gustad, Philip H. Tyrrell, W. Gordon Whaley, David L. McKenna, C. Rajinder Mangat-Rai

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RAYMOND F. HOWES, *Editor*

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The Educational Record

July 1961

Higher Education and the National Purpose

J. KENNETH LITTLE

THE IMPORTANCE and purpose of American education stem from two basic convictions about people and the relationships of people to their government. First, we believe in respect for the dignity of the individual and in the value of his achieving his fullest promise, both for his own happiness and for the welfare of others. Second, we believe that a just government derives its powers from the consent of the governed and that an enlightened people will make wise decisions affecting the common good.

To these ends, we have established schools and colleges whose programs reflect these beliefs. Our educational programs recognize, respect, and cultivate human differences in talent and interest and provide a broad band of opportunities for individual choice of vocation and avocation. They also provide for the acquiring of a core of common knowledge, understanding, and values that afford stability and security to a freedom-loving and self-governing nation.

Our respect for individual freedom and initiative extends to the establishment of our educational institutions. We have encouraged and sustained schools which have wide diversity in sponsorship and support. We have insulated public educational institutions from partisan political manipulation by establishing separate boards of control. We have resisted the notion that men are servants of their nation, that schools are the tools of government. We have confidence that a free people will find ways to marshal their full resources of mind and muscle in pursuit of goals which they believe to be valid for all humanity. The Federal Government and institutions of higher education are both instruments of the people, by the people, and for the people. In the accomplishment of the national purpose, they are interdependent. There is need, however, to ensure that educational institutions are able to resist currents which would divert them from their controlling purpose—the education of the free citizen.

Today, new urgencies prompt new resolutions. In recent months many distinguished individuals and groups have been addressing themselves to the goals of the nation and urgencies of the times. Most of these pronouncements echo the American credo and emphasize

the centrality of education in the American purpose. Excerpts from some of these statements follow:

Our enduring aim is to build a nation and help build a world in which every human being shall be free to develop his capacities to the fullest.[1]

This nation has urgent need to know and understand the value and condition of higher education. But we must understand and appreciate as never before the goals, attainments and requirements of our colleges and universities.[2]

The danger is that we may forget the individual behind the façade of huge and impersonal institutions. The risk is that we will glorify science and forget the scientists; magnify government and ignore the men and women who discharge its functions.[3]

Today, we must give high priority to those aspects of science and technology which will increase our military strength, but for the longer term we should recognize that our creative activities in science and all other fields will be more productive and meaningful if undertaken, not merely to be ahead of some other nation, but to be worthy of ourselves.[4]

But we should not emphasize only the material returns of scientific investment. Science yields a return also in the quality and humanity of our civilization.[5]

To a greater degree than ever before world affairs are American affairs, and American affairs are those of the world. These are matters not alone for the specialists. They are a dimension or whole new set of dimensions of the problems with which all American students and all American colleges and universities are or should be vitally concerned. In these new dimensions lie not only new public responsibilities and duties but exciting opportunities for the individual to be enriched as an educated man and citizen.[6]

President Kennedy, in his special message on American education, stated:

Our progress as a nation can be no swifter than our progress in education—the human mind is our fundamental resource. . . . We do not undertake to meet our growing educational problems merely to compare our achievements with our adversaries. . . . These measures [his proposals for educational legislation] are justified on their own merits—in times of peace as well as peril—to educate better citizens as well as better scientists and soldiers.[7]

This preamble leads to a more commonplace discussion of facts and figures about federal programs in American colleges and universities.

It is doubtful that colleges and universities know the extent of their partnership with the Federal Government. University staff members can make a quick mental check by responding to the following simple exercise. Do you know what part of your student body has some type of financial assistance from a federal program? Count those who have NDEA student loans; veterans' benefits; fellowships in science, mathe-

[1] *Goals for Americans: Programs for Action in the Sixties, Comprising the Report of the President's Commission on National Goals and Chapters Submitted for the Consideration of the Commission* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1960), p. 1.

[2] *The Federal Government and Higher Education*, American Assembly, Columbia University (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1960), p. 194.

[3] *The Pursuit of Excellence*, Panel Report V of the Rockefeller Brothers Fund (New York: Doubleday & Co., 1958), p. ix.

[4] "The Commission Report," *Goals for Americans*, p. 8.

[5] *Scientific Progress, the Universities, and the Federal Government*, A Statement by the President's Science Advisory Committee (Washington: Government Printing Office, 1960), p. 3.

[6] *The University and World Affairs*, Report of the Committee on the University and World Affairs (New York: Ford Foundation, 1960), pp. 11–12.

[7] President John F. Kennedy, *A Message of the President of the United States Relative to American Education*, Document No. 92, U.S. House of Representatives, Feb. 20, 1961.

matics, or foreign languages; assistantships derived from research or training programs; scholarships for teachers institutes in science, foreign languages, or guidance; exchange students from other countries; students in advanced ROTC; and military or civilian employees sent by the federal departments for further training.

Do you know what part of your faculty is engaged, part time or full time, in federally sponsored programs? Count those who are busy on research contracts or grants from the Department of the Army, the Navy, or the Air Force, the Atomic Energy Commission, the National Science Foundation, the National Institutes of Health, the National Aeronautical and Space Administration, the Office of Vocational Rehabilitation, the Office of Education, or the Departments of Agriculture, Interior, Commerce, Labor, or State. Add those who are directing or assisting in research centers, institutes, conferences, and other federally sponsored programs which bring individuals or groups to your campus. Count those who have gone to other countries on government-sponsored missions, and add the faculty time given to advisory panels, selection committees, and other consultant capacities.

Do you know how many buildings on your campus have been erected with assistance from programs established by the Federal Government? Mark those buildings and facilities which were assisted by the PWA, the Housing and Home Finance Agency, the Public Health Service, the Atomic Energy Commission, or the Division of Surplus Property Utilization. Go into your laboratories and mark the technical and specialized equipment acquired in connection with federally sponsored programs.

A quick survey of this kind on the campus of any major university of the nation would vivify the extent and manner of federal participation in the enterprise of higher education. A pilot study of a major state university and land-grant college provides an illustration.

In this university federal funds for educational purposes have increased by 73 percent in the five-year period from 1954 to 1959. Federal funds for research and other special projects increased by 242 percent. (Since 1959, these funds have grown at an even faster rate.) This university had grants or contracts with 20 different federal agencies. In more than 60 out of 85 departments of academic instruction at least one faculty member was participating in a federally sponsored project. In some departments all faculty members were so engaged.

In a test month more than 1,000 different persons received salary or wages from federal funds restricted to special projects. About three-fourths were students; one-fourth, faculty members. These figures do not include staff members who were paid in part from land-grant funds.

The rapid growth in federal income had not diminished the flow of gifts from private sources. On the contrary, while federal income for educational purposes had almost trebled, private gifts and grants had more than doubled. Each of these sources was providing substantially increased portions of the institution's total income for educational and general purposes.

The federal grants and private gifts were concentrated in similar fields of study. For example, 38 percent of the funds for federal projects and 41 percent of the private gifts and grants were for programs in the biological sciences—a concentration which reflects the university's reputation in this area and illustrates the ways in which strong programs attract mutually reinforcing support.

The federal activities ranged across all functions of the university—instruction, research, and public service. The programs, however, were focused primarily on graduate education and research. The influence of international programs was reflected by the growing numbers of faculty members who were taking leave from the campus to serve on educational missions in other countries.

The impact of federal activity on this campus is strong; its influence, pervasive; its effect, basically beneficial. There are overtones of concern, however, about the complexity and cost of participation in federal programs and about problems arising from the fact that federal programs tend to impinge upon segments of the institution, pieces of its program, and parts of its purpose.

It would, of course, be a mistake to assume that the picture of federal activity would be similar at all colleges and universities in the United States. In fact, federally sponsored activity on the scale described in this pilot study would be found in fewer than fifty universities. It is important, therefore, to know the nature of federal programs in order to understand the pattern of participation in them by the nation's colleges and universities. Likewise, it is helpful to know the nature and variety of the nation's colleges and universities to comprehend the dimensions of the institutional resources available to the nation for the accomplishment of its specific goals and purposes.

Federally sponsored programs are of four major types:

1. *Programs of financial assistance to individuals.*—These programs include scholarships, fellowships, traineeships, and other stipends to enable students, teachers, or other selected individuals to advance their education, skills, or specialized competence.

2. *Programs of loans and grants to institutions.*—These programs include grants of real property and specialized equipment or facilities, and loans for construction of specified types of buildings or facilities.

3. *Programs of specialized education or training.*—In these programs arrangements are made with colleges and universities to provide specialized training in designated fields of study or to perform special educational services. Examples are the programs in science education, foreign language training, vocational rehabilitation; agricultural extension service; educational missions in other countries; and the ROTC programs.

4. *Programs of research and research training.*—In these programs contracts are made or grants are given to obtain research results or to stimulate research activity in specified fields or for specified purposes. The major federal research programs fall in the fields of agriculture, health, engineering, and the sciences, including mathematics. Minor research programs include those in the modern foreign languages, the social sciences, education, and educational technology.

The very nature of these programs predetermines the extent of participation by the nation's colleges and universities. About 1,400 of the 2,000 institutions of higher education participate in the student loan program (NDEA). When institutions participating in the programs of veterans' benefits and other programs of student financial assistance are added, it is found that only about 400 colleges and universities of any type do not participate in some federally sponsored program. The nonparticipating schools are composed primarily of theological schools, proprietary schools, small undergraduate colleges, and junior colleges.

The next largest group of participants is found in the program of loans for the construction of buildings and facilities. In 1959 about 600 colleges used this form of assistance.

Participation in the programs of edu-

cation and training is much more restricted. Less than one-fourth of the colleges—about 450—participate in these programs. Most of these schools offer graduate studies, although some are strictly undergraduate schools.

Federally sponsored research programs are found in a still smaller number of institutions—approximately 300. The great bulk of the research activity, however, is concentrated in fewer than 100 institutions—the major universities. Indeed, 66 institutions had 92 percent of all federal income reported by the nation's colleges and universities for the school year 1957–58. Because some of these institutions received large sums for the operation of government-owned laboratories, these figures exaggerate the degree of concentration of federal activity in regular university operations.

To appreciate the meaning of the pattern of participation in federal programs just described, it is necessary to know the types of colleges which compose the nation's resources in higher education, the levels of work offered in them, and the number of each type and level of school. Table 1 lists the type and number of American colleges and universities.

Of the 1,451 degree-granting institutions, only 179 awarded Ph.D. degrees or their equivalent in 1958–59. In fact, there were only seven fields of study in which as many as 50 institutions awarded doctorate degrees in 1957–58. These fields were chemistry, 96; engineering, 60; mathematics, 57; physics, 68; history, 59; psychology, 73; and English, 61.

Master's degrees were awarded by 582 institutions; but many of these schools offer degrees in a single field, education.

The effective present resource for federal programs which demand high-level research and advanced graduate and professional education, therefore, is found within less than 10 percent of the nation's colleges and universities; and within this group there are wide differences in strength of staff, facilities, and financial resources.

Further illumination of the federal impact upon major universities is provided by the fact that 91 institutions reported having more than $1 million of federal income for general and educa-

TABLE 1: TYPE AND NUMBER OF AMERICAN COLLEGES AND UNIVERSITIES, 1960 *

TYPE	NUMBER OF INSTITUTIONS		
	Public	Private	Total
Degree awarding			
Universities	83	60	143
Liberal arts colleges	89	675	764
Teachers colleges	166	32	198
Technical schools	26	24	50
Other professional schools (law, medical)	9	66	75
Schools of art and music	2	43	45
Theological schools	.....	176	176
Total	375	1,076	1,451
Nondegree awarding			
Junior colleges	317	207	524
Grand Total	692	1,283	1,975

* This table does not include 25 technical institutes and 33 proprietary schools which offer less than four years of nondegree work.

tional purposes in 1957–58. These institutions included 57 publicly sponsored and 34 privately sponsored universities. There was at least one such institution in 46 of our 50 states. (It is probable that increased federal activity in 1960 has now produced one such institution in every state.) The federal part of the total income of these institutions for educational purposes is substantial and growing. In public universities, 16 percent of their income was federal; in private universities, 24 percent (the median ratio).

In general, institutions which received large amounts of federal funds also received large amounts from foundations, business and industry, and individual donors. In 1958, 92 institutions received more than $0.5 million in private gifts and grants. Of these universities 31 were public and 61 were private. The median amount received by public institutions was the same as the median amount for the private institutions ($1.3 million).

Fifty-eight institutions qualified for both groups, each receiving more than $1 million in federal income and more than $0.5 million from private sources. Few, if any, have less than $10 million in annual income for educational and general purposes. By any standard they are strong institutions. In a real sense, they are "national" universities. The problems now posed are: Does the nation have enough institutions of this strength, and, if not, how does it build similar strength in other institutions?

WE HAVE had experience with two major patterns of federal participation in the stimulation and development of educational programs.

In one pattern, the Federal Government assists the states in the establishment of specified programs and provides continuing appropriations for them. The century-old experience in the land-grant colleges is often cited as Exhibit A of the possibility of federal assistance without interference and federal leadership without domination. The several acts providing funds to land-grant colleges are a close approach to general institutional grants, a procedure now being generally urged.

The second pattern has developed from the government's experience in meeting wartime needs for research, scientific and technical personnel, and for specialized training programs. Features of this pattern are direct federal-institutional relationships through contracts or grants for specific objectives. The agencies find and presumably use the best performers for their missions. The procedure seeks, rewards, and promotes excellence wherever it may be found. The programs are administered much as are competitive scholarship programs or an extramural extension of graduate school research funds.

The National Defense Education Act uses a blend of these patterns, seeking both to establish a limited number of graduate centers for highly specific purposes and to stimulate the development of a larger number of graduate departments more widely dispersed.

Each of these patterns has brought an advance. Each has disadvantages. It is important to note, however, that practically all advisory groups have recommended general institutional grants as the most helpful and that serious questions of academic freedom have arisen primarily either in programs in which funds go to students or in contract arrangements with individual staff members.

Whatever pattern may be used, it is useful to observe some of the current trends and conditions which are affecting the growth and development of higher education. The following situations are apparent.

The rapid upsurge of federally sponsored activity at home and abroad is hitting our colleges and universities at a time when they must prepare to educate unprecedented numbers of students and when there are growing shortages of qualified teachers.

Measures which strengthen the quality of education, such as enriching the research activities of the professor, tend to reduce the number of students whom he can tutor.

The growing dimension of research and the values placed upon it tend to obscure the need for what has been aptly described as a "worthy and inter-reverberating comradeship between teaching and research." [8]

Graduate education, with standards appropriate for high-level specialization, tends to shape programs of undergraduate education. Some undergraduate colleges appear to have become satellites of major universities, serving a function similar to the preparatory academies of earlier years.

Major universities tend to be centers of graduate and professional study and research, and in these institutions post-doctoral studies are expanding.

The costs of education are increasing both to the institution providing it and to the students receiving it. It is worth pondering which has the greater present need—the student or the institution—and whether the wiser public policy may be to channel some type of government assistance to the schools. There is little advance toward excellence in bringing better students to schools unless the schools can match their excellence.

Programs dominated by manpower concepts and specific missions tend to slight the values of liberal education. The emphasis upon research and research training neglects the functions of undergraduate colleges. In retrospect, the shift of the Selective Service policy from deferment by specified fields to deferment upon the basis of general educational advancement may have provided a useful precedent.

The rapidly growing edge of knowledge poses new demands for staff, library, space, and organization of the curriculum. Rapidly moving national and international events, with attendant new responsibilities in international affairs, require introduction of new studies and reorganization of old curricular materials.

In relation to this set of circumstances, consider the following characteristics of federally sponsored programs taken as a whole:

Federal programs are formulated to meet specific national needs and, therefore, reflect the preoccupation and pressures of the times. Within the past five years programs have been growing rapidly in fields not specifically related to national defense.

They tend to be concentrated in institutions of high prestige which have well-established graduate programs at the doctorate or professional level.

They significantly strengthen education in the fields supported but tend to create problems of morale in other fields.

They are typically field oriented and have strong appeal to faculty members as individual specialists. This situation complicates institutional planning and control. Also, since federal agencies deal directly with individual institutions, programs of state-wide and regional planning tend to be bypassed.

They utilize institutions in varied ways, but practically all of them require outlays of time, space, and financial resources from the participating institutions. The degree of support, direct and hidden, which institutions themselves contribute to federally sponsored activities does not appear in the official records. The amount is large enough, however, to demonstrate that the institutions

[8] Warren Weaver, "A Great Age for Science," in *Goals for Americans*, p. 118.

and federal agencies are truly partners in the accomplishment of national objectives.

The administration of federal programs is uncoordinated. Each agency establishes its own contacts with the academic community and formulates its own policies. Multiple programs and multiple policies increase the administrative costs of participating institutions.

Finally, there is no nexus within the structure of the Federal Government which adequately represents either the voice of the colleges and universities or the voice of the people on matters which affect institutions of higher education. The very diversity of colleges and universities tends to make it difficult for both Congress and the executive branch of the Federal Government to learn the consensus of these institutions upon educational issues, if indeed there is a consensus.

WHAT of the future? The past several months have seen a flurry of reports and pronouncements on issues in higher education. Some of these pronouncements represent viewpoints of distinguished individuals, committees, commissions, or task forces. Others are considerations by associations or councils which represent institutions of higher education. Some of these statements are concerned with specific legislative proposals, but in all of them certain ideas are central. The following excerpts from the several reports are illustrative:

1. *The Federal Government and higher education are interdependent*

. . . the question at issue is not whether the federal government should have a role in higher education. That question has been settled affirmatively in the Nineteenth Century and never seriously reopened. The question at issue is *what kind of role* the federal government should play in higher education.[9]

No one person or set of persons, no one organized body, no one level of government can be expected to sustain and expand the system of higher education which will be required for our national and individual well being.[10]

All the major studies show that after traditional sources of income, including student tuition and fees, have been stretched to the limit, there will be a large gap that can be filled only by greater support from the federal government.[11]

The challenge of a century ago was met by bold national action to create a new emphasis in American higher education (land-grant colleges). . . . Today's challenges of change also call for far-sighted action, for national leadership in education, as well as in other fields. . . . Today's problems call for action by levels of government and by private individuals and enterprises.[12]

No matter how many diverse elements of our society may join in their support . . . basic research and graduate education are in the end, by their very nature, a problem for the nation as a whole, and so for the national government. . . . Both basic research and graduate education must be supported in terms of the welfare of society as a whole. It is in this large sense that the role of the federal government is inevitably central.[13]

[9] *Federal Programs in Higher Education*, Summary of a Discussion by the Trustees of the Carnegie Foundation for the Advancement of Teaching, Nov. 21, 1958 (New York: The Foundation), p. 4.

[10] *The Federal Government and Higher Education*, p. 194.

[11] *A Proposed Program of Federal Action To Strengthen Higher Education* (Washington: American Council on Education, January 1961), p. 1.

[12] "Recommendations on Desirable Action Affecting Higher Education," American Association of Land-Grant Colleges and State Universities; to appear in *Proceedings* of these associations for the year 1960.

[13] *Scientific Progress, the Universities, and the Federal Government*, p. 10.

2. *Maintain diversity of institutions and in sources of support*

American higher education is characterized by great diversity. . . . It is an article of our faith, justified by our experience, that this diversity is a source of strength. . . .

The times call for a greater investment in higher education as a whole. The crucial issue is not how many dollars come from private sources and how many from public sources but whether or not the total of these dollars will be sufficient to meet the challenges colleges and universities face.[14]

As federal support grows, there is a dangerous tendency to consider other sources as too small to be important. But it is of the utmost importance that we increase, rather than decrease, the absolute number, the variety and the total potential of all sources.[15]

. . . the very fact of growing federal activity makes it urgent that state, local and private efforts also be increased, for, especially as concerns private efforts, there always will be much that the government either does not or cannot do.[16]

3. *Create more centers of strength*

. . . we urge the importance for the country of an increase in the number of universities in which first-rate research and graduate teaching go forward together. . . . Existing strong institutions cannot fully meet the nation's future needs.[17]

. . . NDEA is already a significant factor in the support of university world affairs activities. . . . a substantial program is needed to develop new or expanded centers in carefully selected universities.[18]

. . . new administrative patterns for support of [medical] research must be developed. . . . The development of clinical research centers, both categorical and non-categorical . . . will constitute one of the most important opportunities for increasing the productivity of [medical] research.[19]

4. *Improve the quality of teaching at all levels*

The federal government can and should provide greater assistance in increasing the supply and improving the quality of college teachers.[20]

. . . the neglect and disparagement of the teacher, which has long existed at high school and earlier levels, has now seriously invaded the universities. *This trend must be reversed.* . . . our country will be vastly poorer if we cannot succeed in devising ways to preserve the integrity, the independence, the variety, and the excellence of these smaller colleges.[21]

In our judgment, the general pattern of federal support for science has so far developed with very little regard for the problem of building strong faculties.[22]

Because of the critical shortage of teachers at all levels, highest priority should be given to enlarging the national fellowship program in order to attract able people into elementary and secondary, as well as college, teaching.[23]

5. *Strengthen institutional support*

. . . the present system under which most federal research funds flow to universities is creating problems of a serious nature. . . . We feel that there are ways of making this support available which would . . .

[14] *The Need To Close Ranks in Higher Education: A Statement of the Problems and Policies Committee* (Washington: American Council on Education, February 1959), pp. 1, 2–3.

[15] Weaver, "A Great Age for Science," in *Goals for Americans*, p. 120.

[16] *Scientific Progress, the Universities, and the Federal Government*, p. 29.

[17] *Ibid.*, p. 14.

[18] *The University and World Affairs*, pp. 61, 62.

[19] *Federal Support of Medical Research*, A Report of a Committee of Consultants to a Subcommittee of the Committee on Appropriations of the U.S. Senate, May 1960, p. 114.

[20] *A Proposed Program of Federal Action To Strengthen Higher Education*, p. 5.

[21] Weaver, "A Great Age for Science," in *Goals for Americans*, pp. 117, 118.

[22] *Scientific Progress, the Universities, and the Federal Government*, p. 24.

[23] "Report of The Task Force Committee on Education to President-elect Kennedy" (Press release, Jan. 6, 1961).

strengthen rather than weaken the university as a whole. We call attention to the long-standing and highly successful example of use of formula grants in agricultural research.[24]

It seems clear that institutions of higher learning cannot continue indefinitely to undertake such service functions [for the federal government] unless they receive additional support to strengthen their basic resources of staff, faculties, and general income.[25]

A new program of federally administered assistance to institutions of higher learning for construction of academic facilities . . . should be established.[26]

In any purchase of services, the government should pay the full costs of the services it requests. . . . Of all the appropriate areas of increased federal support . . . the one posing the least threat to college and to university freedom and the one most worth stressing is that of assisting with the provision of capital facilities.[27]

6. *Safeguard institutional independence and freedoms*

. . . institutions in turn must maintain individual responsibility for their own programs; and they must demonstrate capacity and will to join together freely to guard against unnecessary restrictions or centralized control.[28]

Perhaps the most important single task of the universities is to see to it that their own standards of freedom and excellence are maintained in a period of growing connection with government. . . . But the first and greatest responsibility for keeping our universities free and self-reliant rests with the universities themselves.[29]

7. *Improve coordination of government and educational policy*

. . . the government should have a well-coordinated and powerfully directed general policy. In our judgment the final executive authority must necessarily lie in the office of the President.[30]

[The President should designate] the field of higher education and world affairs as an area of special concern for one of his Assistants and as an area requiring special arrangements for coordination among the cabinet officers concerned. . . . University-government relationships are complicated by the fact that the universities cannot deal with the federal government . . . as a single entity.[31]

Establish a permanent Council of Educational Advisers to the President of the United States to coordinate policies and procedures of the educational programs in various federal agencies and to plan on an over-all, long-range basis a proper role for the government in support of education.[32]

The excerpts quoted above do not reflect important ideas or suggestions on other themes, nor do they adequately convey certain differences in belief or emphasis upon the themes selected. But there appears throughout these reports an insistent appeal for the kind of consideration and action which joins institutions of higher education with the national purpose, respects and promotes their basic functions, recognizes their diversity, and deals with them whole.

THE challenge before institutions of higher education is exciting. The excitement, however, is dampened by a lack of means to reach the goals. It is easy to conclude that the basic thwarting circumstance is simply institutional poverty. But it is doubtful that the mere addition of x, y, and z dollars, by formula, to the

[24] "Recommendations on Desirable Action Affecting Higher Education."
[25] *A Proposed Program of Federal Action To Strengthen Higher Education*, p. 2.
[26] *Ibid.*, p. 4.
[27] *The Federal Government and Higher Education*, pp. 196, 198.
[28] *Ibid.*, p. 196.
[29] *Scientific Progress, the Universities, and the Federal Government*, p. 12.
[30] *Ibid.*, p. 26.
[31] *The University and World Affairs*, p. 82.
[32] *A Proposed Program of Federal Action To Strengthen Higher Education*, p. 10.

budgets of the nation's 2,000 colleges and universities would meet the urgencies of the foreseeable future. The problem is not simply to do better what is now being done. The call is for new plans and programs, new definitions of role and share, new standards of excellence, new approaches to teaching and learning, new arrangements for use of time and space, new patterns of cooperative action, new paths of partnership.

Our nation annually invests millions for research and development to effect dynamic progress in business and industry, to improve its crops and herds, to conquer disease, to explore the heavens, and to revolutionize its organization and capacities for military defense. It is curious that, by comparison, it invests a pittance for research and development to infuse new ideas into the organization of its educational programs, its arrangements for effective learning, and the planning and use of its school plant.

It is also curious that minds trained in educational institutions apply research and technological and administrative genius to bring about startling changes in practically every sector of human enterprise—except education. In fact, it has only recently become fashionable, even respectable, in important parts of the academic community to give attention to questions of the nature, meaning, problems, and possibilities of the total educational enterprise. Much of the attention still centers in discussion and debate. The need is for imagination, ingenuity, research; but most of all for action.[33]

One underlying principle seems clear —the principle of unity, or interdependence.

The Federal Government is but a part of our government. There are few public matters or interests in which federal, state, and local units of government are not joined in action. To borrow an analogy, our government is not a three-layer cake; it is a marble cake.

Higher education is but a part of the educational enterprise. In fact, the school is but one of many instruments for learning. The quality of elementary and secondary schools depends upon the quality of the teachers which colleges prepare. The quality of the colleges and universities depends upon the quality of the students which the elementary and secondary schools prepare. Strong graduate education depends upon the strength of hundreds of separate undergraduate colleges, as well as illustrious departments of major universities.

The function of higher education is unitary. Instruction, research, and public service are complementary aspects of a single purpose. Programs which fail to recognize this essential interdependence disregard the nature of educational institutions.

The world of knowledge is unitary. Its organization into fields of study is arbitrary and shifts with the growing edge of new knowledge. Limitations of knowledge in one sector cripples advance in another. Programs which fail to provide for advance across the broad front of knowledge may ultimately be self-defeating.

Finally, this is one world. National interests and purposes now have international overtones. The values we hold about the dignity of man and the importance of education for free, self-governing peoples are valid for all humanity. The extension of these values to the peoples of new and developing nations is now a part of the national purpose and a new frontier of educational service. In the enveloping struggle of arms and ideas, this effort may prove the strongest bastion of our defense. The power of the ballot may prove to be greater than

[33] Philip H. Coombs, "The Greatest Shortage in Education," *The Clearing House*, December 1960, pp. 195–200.

the power of the bomb. The foreign mission may strike closer to the target than the guided missile. In partnership with the educators of other free nations and their governments, our institutions of higher learning are in the vanguard of this effort and a chief resource in its fulfillment.

The urgencies we face call for an uncommon use of dollars and sense. Surely, the American genius for accomplishing goals about whose worth we are convinced will find the ways to use both dollars and sense to effect the most fruitful partnership between our government and our institutions of learning.

In determining what kinds of support can appropriately be requested from the Federal Government, the character of the existing system of higher education suggests important limitations. More than half the colleges and universities, enrolling nearly 45 percent of the students, are privately supported. All types of institutions must be expanded and improved if the essential national goal of providing for future students is to be met. Hence the American Council on Education, representing higher education as a whole, does not ask general assistance from the Federal Government in paying faculty salaries. (The Council considers it entirely appropriate, however, for the Federal Government to pay the full cost of the portions of faculty time devoted to federally financed programs of instruction and research and to continue the existing type of support to the land-grant institutions.) Nor does it ask direct assistance from the Federal Government in meeting general operating expenses. (The Council considers it entirely appropriate, however, for the Federal Government to pay that portion of general operating expenses allocable to federally financed programs of instruction and research, and to continue the existing type of support to the land-grant institutions.) The basic recommendations presented [in this pamphlet] deal with assistance (1) in providing housing and academic facilities, (2) in augmenting the number and improving the quality of teachers and research workers, and (3) in offering able students with limited means the opportunity of a college education.

There are priorities even among these three major types of assistance. Additional financial aid to students is advocated only as a supplement to adequate support for new buildings and augmented staff. Helping more students to demand admission to college without at the same time supplying buildings to accommodate them and faculty to teach them would merely make more serious a problem already acute.—From *A Proposed Program of Federal Action To Strengthen Higher Education,* published by American Council on Education, January 1961.

The Proper Relationships between State Governments and State-Supported Higher Institutions

A. J. BRUMBAUGH

THE VITALITY of American colleges and universities in fulfilling their role in the life and welfare of the nation has been derived in a large measure from the autonomy accorded them. Among those that are tax supported, some are assured autonomy by constitutional provision, others by legislation, and some are vouchsafed it by tradition. Freedom from external controls has enabled these institutions to respond to changing social needs, to prepare leaders and cultured citizens, and, through research, to extend the boundaries of knowledge and improve the welfare of mankind. To achieve these goals, institutional policies have been made by distinguished laymen, and responsibility for management has been delegated to professional educators. The continuing excellence of state colleges and universities will depend on the preservation of their autonomy.

Today, however, there is great concern over the persistent erosion of this autonomy; a concern that is amply justified by the challenging reports of Malcolm Moos and Francis E. Rourke, *The Campus and the State*, and the Report of the Committee on Government and Higher Education, *The Efficiency of Freedom*.[1] Several forces are encroaching simultaneously on institutional autonomy. They originate in state agencies for fiscal control, state agencies for personnel administration, legislative bodies, and the chief state executive offices. How these forces affect higher education may be indicated by a few specific illustrations.

In the area of fiscal control, responsibility for purchasing is reported to be located in a centralized agency in thirty-nine states and to be centralized to a marked degree in six others. The effect of this arrangement is to put responsibility for decisions about purchases into the hands of persons who often are not familiar with special institutional requirements. The consequences at times are prolonged delays that defeat the purposes of projects for which equipment is needed at a specified time and unsatisfactory substitutions for specified brands of equipment or materials.

Through preaudits, to which many institutions are subject, state auditors or comptrollers actually influence educational policy under the guise of determining the legality of educational expenditures. Instances have arisen in which state officers declined to approve payments of honoraria, the payment of salaries of faculty members on sabbatical leave, and the expenditure of funds for laboratories.

Still in the area of fiscal control is responsibility for capital expenditures. State building authorities and commissions have used college and university properties for unauthorized purposes; have rearranged priorities for building projects; have prescribed space utilization standards in planning new buildings; have accepted architectural plans without adequate consultation with those who are to use the space; and have in-

[1] Both titles published by Johns Hopkins Press, 1959.

curred long and expensive delays in construction or in making essential repairs.

Serious difficulties have also arisen from the centralization of personnel functions in state agencies. Rigid rules of such agencies interfere with the selection of personnel for specialized nonacademic positions on a campus, while the extension of state personnel systems to cover professional and administrative personnel gives rise to even more serious problems. The unwarranted intrusions of state personnel offices on campuses have not been many, but in some instances they have been sufficiently dramatic to indicate how disastrous their effects can be.

State legislatures at times exercise controls by requiring increases in tuition; failing to appropriate funds or prescribing how funds shall be used; regulating admissions policies; prescribing or restricting educational programs; and establishing agencies to exercise fiscal oversight of higher institutions.

Even state governors have become involved in such matters as packing boards of regents with partisan members, influencing the selection of a new president, determining educational policies, and terminating faculty appointments.

By way of summary, it may be said that at present the threat to autonomy is greater than the loss, but there is the ever-present danger that ideas and practices of the type just noted will spread and that the loss will be correspondingly increased.

There is no simple explanation of this trend toward external controls of state colleges and universities. It is possible, however, to identify a number of factors which in various combinations and with varying degrees of importance contribute to these developments. By a chance alliterative combination these may be designated the five "C's," namely, communication, confidence, competition, coordination, and centralization. A word about each will suffice to indicate how it affects institutional autonomy.

Throughout discussions of the relationships between the campus and the state occur references to the need for better communication. Following are examples:

> Above and beyond these technical issues, legislators and educators agree that both sides have been remiss in open and helpful communication. It is significant that most of the disturbances in legislative-campus relations, including many of those chronicled in the foregoing sections, were either caused or aggravated by broken lines of communication. But improving the flow of information in both directions involves more than a simple recognition of need, for there is often disagreement between the campus and the legislature about the nature of the information that should be exchanged.[2]

> But if communications have faltered between the legislatures and the colleges, higher education must assume a major share of the responsibility. One of the common reasons for legislative intrusion on educational administration has been the lack—or the suspicion of lack—of full information from universities regarding campus operations and plans.[3]

> In these days of taxpayer concern about rising governmental costs, external controls over higher education are bound to expand unless leaders of higher education can convince the public that they have as much concern about operating costs as any external control official could ever have. This concern must be communicated to the public and internal administrative procedures must be tightened so as to reflect the concern.[4]

The natural result of inadequate communication is lack of confidence. When institutional operations are veiled in secrecy, it is to be expected that suspicions of irregularities will arise. It is a grave mistake to assume that the pub-

[2] Moos and Rourke, *The Campus and the State*, pp. 281–82.
[3] *Ibid.*, p. 283.
[4] *Ibid.*, p. 338.

lic cannot understand the intricacies of college or university operations. To withhold information on these grounds is in itself an expression of no confidence in lay intelligence. Public confidence is seriously jarred when irregularities in institutional operations are brought to light or when the facts do not support public declarations by representatives of the institution. True, there are not many such instances, but there have been just enough in some states to undermine public confidence. The better the public understands the operations of institutions and the need for institutional autonomy, the greater will be its confidence in the ability of the institutions to manage their own affairs.

Competition is a third factor. It pertains more particularly to a scramble for a share of the tax dollar. As the revenue income of states fails to keep up with rising costs, the competition between higher institutions and other tax-supported activities such as roads, welfare, agriculture, conservation, public health, and the government itself becomes increasingly keen. These competing pressures give rise to demands for greater centralization of controls. But there is also the competition among colleges and universities. Pressures brought to bear on a legislature for appropriations by various colleges and universities give rise to questions of unnecessary duplication, inequities in costs, and uneconomical operation. The more persistent these questions become, the more likely is a legislature to take steps to curtail expansions, to limit appropriations on the basis of inadequate information, or to create a coordination board or commission to bring some order out of an unorganized and confusing situation.

A demand for coordination is the direct outcome of confusion and competition. It is difficult to argue that there is no need for state-wide coordination; and, as you know, in response to this need a number of plans of coordination have already been developed. Needless to say, all of them create concern and resistance on the part of the institutions to which they apply. If these coordinating boards or commissions limit their activities to policy considerations on a state-wide basis, they can perform a greatly needed public service without interfering with institutional freedom. But when such boards assume responsibilities for institutional management, they become another arm of the state wielding a heavy hand.

Each of these factors—inadequate communication, lack of confidence, intense competition, and the lack of coordination—tends to give an impetus to the centralization of governmental authority and control. But over and above these influences is also involved a philosophy of government. On this point the report of the Committee on Government and Higher Education says:

> However, it is not only financial pressure which has brought new controls into higher education. Both the theory and practice of state administration have undergone considerable change in recent years. It was once traditional for each state agency to be given a large measure of autonomy. Decentralization was then the philosophy of administration. But over the years, the conviction has spread that efficiency demands a tightly knit system of administrative centralization, with direction and control imposed from above.
>
> The practice of this philosophy of centralization has pointed implications for the traditional independence of state colleges and universities. Many state officials believe that institutions of higher education should be brought under the state's system of uniform administration. Influential state officers argue that if central controls can be applied successfully to such activities as highways, conservation, and other regular state programs, they are equally valid for higher education.[5]

[5] *The Efficiency of Freedom*, p. 11.

While there appears to be a disposition on the part of some authorities to advocate decentralization of responsibilities and commensurate authority, it will be very difficult immediately to reverse the trend toward centralization.

Within the framework of the organization of governmental functions, centralized or decentralized, are certain basic considerations relating to the role of state colleges and universities that must be recognized. These may be expressed best in terms of steps that can be taken both by the higher institutions and the state to accord institutions the freedom that is essential to their effective operation and at the same time to give the people who support them assurance that they are operating efficiently and effectively.

On this fundamental issue, the Committee on Government and Higher Education has presented a series of recommendations relating both to what higher education can do and to what the state can do. At the risk of doing an injustice to the report, I shall present the recommendations without including statements of interpretations.

The proposals on what higher education can do are:

1. The Committee encourages academic officials, trustees, alumni, and all other individuals with an interest in higher education to make a strenuous effort to explain the case for independence of colleges and universities persuasively to state officials and the general public.

2. Colleges and universities should be candid and communicative in their dealing with state government.

3. Colleges and universities should make every effort to establish, maintain, and deserve a reputation for efficiency and sound management.

4. Colleges and universities in each state should take the initiative in co-ordinating their programs effectively through voluntary and co-operative means.

5. Colleges and universities should avoid undertaking activities and offering courses that are not properly within the sphere of academic enterprise.

6. Governing boards of colleges and universities should assert their traditional authority to control the policies and operations of their institutions.[6]

With reference to what the state can do, the report recommends that legislatures (*a*) give legal autonomy to "every institution of higher education that carries on a substantial program of teaching and research," (*b*) avoid all attempts to legislate specifics of educational policy when allocating funds to higher education, (*c*) use interim committees and service agencies as a means of keeping informed, but not as instruments of control, (*d*) "review and revise those statutes pertaining to higher education and fiscal and management controls which have become outmoded or which impede the effective management of the institution by the responsible officer."

Regarding governors, the committee notes that a large measure of the success of higher education will depend on the caliber of members serving on governing boards. The committee proposes that governors "survey the administrative controls over higher education and issue administrative orders (where statutory changes are not required) to eliminate those that are unnecessary or harmful," and that they "exercise their influence to keep higher education out of any partisan conflict."

A number of recommendations pertaining to specific agencies of government are:

On budgeting:

1. Regarding higher education, the work of budget officers should be confined to: (*a*) analysis of the total budget requests; (*b*) recommendation to the governor of the total amount needed for higher education, along with the results of the budget analysis.

[6] *Ibid.*, pp. 25–28.

2. Officers and trustees of the institutions of higher education should have the right to defend their budgets before the governor and the legislature rather than to be forced to depend on a third party to present budget justifications on their behalf.

The committee observes further that:

Annual allotments or full grants of appropriated funds are preferable to quarterly or monthly allotments for higher education.

It also recommends that:

In states which do not make lump-sum appropriations, colleges and universities should be given the maximum possible flexibility in the administration of funds, including authority to make essential transfers between categories in the budget.[7]

On purchasing:

1. Colleges and universities should be encouraged, where savings will result, to make voluntary use of state purchasing services, but they should be exempted from compulsory centralized state purchasing.

2. Purchases made by institutions should be in conformity with modern purchasing procedures, including open and competitive bidding for large items and bulk purchasing.[8]

On auditing:

1. The Committee reaffirms the need for a thorough post-audit of the expenditures of institutions of higher education.

2. The pre-audit should not be applied to higher education.[9]

On personnel:

1. If a university is to fulfill its mission, autonomy in the control of both academic and nonacademic staff is by far the preferred arrangement.

2. A high responsibility rests upon the colleges themselves to use the most effective personnel practices in their own employment programs.[10]

Where personnel controls are in effect, the committee recommends the following interim remedial measures until the controls are removed:

1. Initially, the personnel agency should solicit the counsel of the educational institution to determine actual needs in personnel and to offer a candid evaluation of the ability of the personnel agency to meet those needs.

2. Rules and procedures should be made as flexible as possible.

3. Colleges and universities should not be required to follow civil service procedures when these procedures are of no real assistance in locating scarce employees.[11]

On building:

1. Since higher education represents a substantial share of the capital outlay program of most states, the Committee recognizes the necessity for requests of colleges and universities to be co-ordinated in a state-wide capital program.

2. Colleges and universities should utilize, on a voluntary basis, the services and advice of central building agencies whenever their own architectural and engineering staffs are not adequate to handle building programs.

3. Central building agencies should encourage space utilization studies but should not have authority to allocate space on the campus.[12]

A final suggestion by the committee which merits special consideration is that states and regions "hold conferences or workshops concerned with the relationships of state government and higher education, either on a broad scale or in specific fields of activity."

My own conclusions concerning the relationships between the state and its institutions of higher education, briefly stated, are:

1. The allocation of the financial resources among the agencies of state government is clearly a function of the legislature.

[7] *Ibid.*, pp. 34–35.
[8] *Ibid.*, p. 37.
[9] *Ibid.*, p. 38.
[10] *Ibid.*, p. 39.
[11] *Ibid*, pp. 39–40.
[12] *Ibid.*, p. 42.

2. The determination that the funds appropriated by the legislature are used for the purpose to which they are allocated is the responsibility of agencies of state government.

3. State colleges and universities should give the legislature and appropriate executive branches of the government all information necessary to the effective discharge of their responsibilities.

4. The legislature is justified in seeking assurance that higher institutions are coordinated and should, in the absence of satisfactory voluntary coordination, take appropriate steps to achieve it.

5. Within the general framework of a state system of higher education, each college or university should be granted a maximum degree of autonomy, both in its fiscal operations and in the management of its personnel and its academic program.

Vigorous steps must be taken jointly by all the institutions and the organizations that represent institutional interests to arrest current trends toward unwarranted invasion of institutional autonomy and to remedy conditions where unwarranted controls have already been established.

Included in the materials currently being distributed by the Office of Statistical Information and Research as part of its loose-leaf *Fact Book on Higher Education,* are several pages on costs of attending college. The basic source of information was *American Universities and Colleges;* some additional data were, of necessity, taken from available college catalogues. Analyses were made by four-year periods, beginning with the first edition of *American Universities and Colleges* in 1928. Data were analyzed for the following groups: 14 large private institutions; 14 medium sized private; 20 women's colleges, private; 20 large public; 12 small public; and 19 public and private medical colleges. . . .

For the private institutions studied, the increase since 1928 ranges from 274% to 354% for tuition and fees; from 82% to 113% for room and board; and, for the two combined, from 152% to 206%. In three of the four groups of private institutions, tuition and fees now exceed room and board and in the fourth group the trend clearly is in this direction. The range of increase from 1956–60 is as follows: tuition and fees 40–42%; room and board 14–17%; the two combined, 27–29%. . . .

For the public institutions studied, the range of increase since 1928 is: tuition and fees, resident 187–222%, nonresident 338–343%; room and board 114–126%; the two combined, resident 131–144%; nonresident 184–187%. The range of increase since 1956–60 is as follows: tuition and fees, resident 22–37%; nonresident 32–40%; room and board 15–16%; the two combined, resident 17–21%, nonresident 22–26%.

For the two groups of public institutions studied, the percentage of the 32-year increase for tuition and fees which occurred in 1956–60 for resident students was 28% and 39%; for nonresident students 31% and 37%. Corresponding percentages for room and board for public are: 25%, 25%; and for the two combined, resident 26%, 29%; and nonresident 28%, 32%.—From *Higher Education and National Affairs,* issued by the American Council on Education, Nov. 7, 1960.

The Influence of Industries on Local Academic Programs

ASA S. KNOWLES

Colleges, both public and private, are influenced greatly in their operations, services, and development by the clientele and communities they serve. They are influenced, too, by church organizations, government agencies, civic groups, and alumni. Chief among the influences, however, shaping the patterns of higher education throughout America, is the interrelationship of colleges and business and industry. This stems in part from the great emphasis on corporate financial support and a growing interdependence of industries and colleges. In a nation which is urban centered in population and in its business and commercial life, no group of colleges is influenced more by this than those located in urban or metropolitan areas.

The metropolitan colleges play a vital role in metropolitan communities. The community looks to its colleges for leadership in cultural activities, a continuing flow of personnel educated in many highly specialized vocations and professions, and other special services. The communities and metropolitan institutions of higher learning interact on one another. Each is stronger socially and economically because of this interrelationship. The metropolitan college provides also much of the creative leadership and knowledge essential to community welfare. In Boston, for example, nearly forty new industries have had their origins in the research activities of the universities and colleges of the area during the last two decades, a source of new industrial life for the metropolitan area.

These metropolitan colleges of America include many of the nation's most outstanding institutions of higher learning. With the exception of a few that are international in scope of service, most serve primarily the metropolitan communities where they are located. More than any other group of colleges in America, they are caught up in this close relationship and interdependence with business and industry. They have a special interest, therefore, in the impact of the college-industry relationship on higher education.

Industry's impact on colleges

In these times, our national welfare and security are identified with the quality of teaching, research, and the academic freedom of colleges and universities and all that this freedom implies. It seems appropriate to review just how industry influences the patterns of operation and development of colleges, particularly the metropolitan colleges.

Industry assists in the admission of students through scholarship programs, sometimes in a cooperative educational endeavor; it makes grants in support of departmental and general college budgets; it sponsors and pays for research performed by faculty; it employs faculty as consultants and advisers; it hires graduates and in some instances sends them to graduate school as part of their job assignment; it makes contracts for special instruction often for in-plant programs of executive development, technical courses, and liberal education; it encourages continuing education of employees in adult programs of study and often pays tuition; and representatives of industry participate in the

professional societies which set standards and make inspection for accreditation of many professional programs.

All of this influences who is admitted to college; what faculty members do; which departments flourish; what kinds of research are undertaken; which colleges will have additional resources from financial grants; what programs will be offered; what emphasis will be given to graduate programs, part-time and full-time; which faculty will have high income; and, in summary, what will be the stature and community reputation of the college or university.

Just how the influence of industry is accomplished is best described by a discussion of industry-college relationships as they affect enrollments, course programs, faculty, research, and financial support.

Enrollments

Industry influences the numbers that are enrolled in various academic programs by its willingness to employ certain types of graduates—accountants, engineers, mathematicians, and so on. Industry's selection of the colleges from which it recruits graduates influences decisions regarding the colleges that students will attend; thereby the prestige of some colleges is enhanced over others. Industry has a similar influence when it specifies the fields of study of company-sponsored scholarship programs. Today engineering and science are favored. Consequently, institutions offering these programs benefit most by their ability to attract able students and by the amount of financial aid they can offer in recruiting students. In the selection of colleges to award scholarship funds, industry tends to give such colleges preferred status. Even the generous national programs designed to motivate those having the best minds to attend college tend to favor certain institutions indirectly. Given adequate financial resources, winners tend to seek admission to the "name" colleges, using this term to include colleges and universities that have national or regional reputations.

Course programs

The professional courses and programs of study of the metropolitan college or university are usually in fields of study which lead to careers in the local area. Both undergraduate and graduate programs offered through adult and continuing education programs are designed in large measure to serve the on-the-job needs of persons already employed. Special courses, institutes, and short courses are geared to the needs of employees of industry and business. They provide refresher work or lectures to keep abreast of developments in the fields in which participants are employed. In metropolitan areas, industry frequently pays the tuition cost of its employees enrolling in any of these programs. Northeastern University recently established an evening degree program in electrical engineering in response to demands of Boston's electronics industry.

Faculty

Industries influence faculty appointments by their use of faculty members to teach in-plant courses and to serve as consultants. This influences the amounts of salaries paid and the superior ability of some institutions to attract and hold faculties. The availability of extra teaching or opportunities to do lucrative consulting work is an advantage in recruiting faculty. These relationships give special advantage to some colleges and faculty in certain specialties. Moreover, industry in a metropolitan area is also a source of highly qualified part-time teachers, which is a financial advantage to metropolitan institutions.

Research

Industries influence greatly which colleges will take part in advancing knowl-

edge by their choices of which ones will do important research. Few colleges and universities have resources to conduct large-scale pioneering research programs unless such research is sponsored and financed from outside sources. Resources for basic research determine ability of an institution to attract and hold outstanding scholars and scientists, particularly faculty members who teach at the graduate level. The metropolitan universities have developed close ties with industry through research, which often permit paying higher salaries by the colleges favored with research contracts.

Financial support

Industries can and do influence which colleges will prosper and which will grow in scope of service and prestige by their choice of those given financial support. Financial support takes the form of grants (unrestricted and restricted), funds given to match scholarships awarded to students who attend a given college or university, and research grants (including overhead for use of facilities). They make contracts for special instruction on and off campus. They donate gifts in kind, gifts to building programs, and funds to establish chairs or living professorships. Grants often influence the offerings in particular fields of study to include those of special interest to the industry.

Many metropolitan colleges and universities are favored in these respects because they are known to the local industries. These institutions can bolster their position by calling attention to services to the community, education of children of employees, cultural contributions to the community, and so on.

Industries select carefully those colleges and universities they support financially. Grants must be justified to stockholders on the basis of service. There is perhaps a tendency to support those institutions whose names are best known because contributions to these will be less suspect.

The largest amount of support goes to the larger, well-established colleges and universities having great resources. Here is where industry feels it can get the most for its money. The facilities and staff have the capability needed to do the research and provide the kind of education desired as well as a prestige affiliation.

In all of our college-industry relationships, the industry personnel manager or college relations officer has a significant role in influencing the patterns of growth and strength of institutions of higher learning. He determines which colleges will be favored by recruitment of graduates and scholarship programs. He can influence the making of grants in support of the ongoing programs of colleges of greatest importance to his employers. He makes contracts for special instruction. The industry research officer, too, influences the selection of institutions to receive grants and the appointment of consultants. These officials are like brokers who by their choices decide which colleges will have increased resources, opportunities for service, greater strength in faculty and resources, and, to a degree, prestige.

Evaluation—questions to be resolved

Industry-college relationships in America raise many questions in the minds of college educators. All are very grateful for industry's growing generous support of higher education, but the educators are keenly aware that they have a responsibility to develop higher education so that it will provide services to meet our nation's needs now and in the future. If higher education is to continue as a bulwark of freedom and strength both in our nation's security and in national prosperity, educators must meet today's needs, and they must plan ahead to assure that higher education will fulfill its future obligation to society. Any eval-

uation of the relationships of industry and college would include such questions as these:

1. Is the tendency on the part of industry to make grants to colleges having great research capacities or outstanding reputations for academic leadership leading to a hierarchy of size, influence, standards, and stultification? Does this cause too many colleges to tend to copy the successes of outstanding institutions in the hope of obtaining financial support?

2. Should steps be taken to assure that vast sums of money are available for new educational programs such as those which emanate from cross-pollination of old and new courses, new approaches to research, and new methods of teaching? Are foundations meeting this need adequately?

3. Should industries be asked to provide funds to help establish new colleges or to assist present institutions to increase their size in proportion to population growth?

4. Should scholarship grants for students in large urban areas be for tuition, travel, and dormitory living costs away from home, or should they provide just tuition at local universities?

5. What steps should be taken to assure that the many colleges with limited financial resources are better supported to the end that equal opportunities for high-quality education are provided to all students throughout the nation?

Comments on Collegiate Administration

JOSEPH M. RAY

We sometimes hear it said that the faculty *is* the college. In my view, such a statement is as wrong as it is fatuous. It is obvious that the quality of a college can be measured by the caliber of its faculty. The prime requisite for a good college is a good faculty. There is, however, a great deal more to a college than the faculty and the level of *esprit de corps* which it provides.

An institution such as a state college is the meeting ground for many varied elements of the community and the state, where generally common goals are agreed upon and pursued. It is a complex of established procedures and understandings, the major outlines of which are acquiesced in by all who are involved or who involve themselves in the institution's affairs.

Many factors bear upon the development of a college: the community, whether it is static or growing, arid or humid, urban or rural, agricultural or industrial, active or lethargic in college affairs; the student body, whether it derives from near or far, is largely homogeneous or varied in national origins, attended good or poor elementary and secondary schools; the administrative and supervisory system, whether it exercises more or less vision and obtains more or less financial support at the right times and in the right places. These factors and many others provide a continually moving, tightly woven fabric of institutional life that proceeds from the day of founding until the moment at hand. The future, some sort of future, seems always assured, but the precise course it will take depends for details upon the interaction of many forces that impinge upon the life of the college.

In the face of these observations, let us reflect for a moment upon the impact that a president has upon an institution. Before his course and that of the institution met, the college had a full and established institutional life, and there is little he can do to change it. He and not the institution must make the major adjustment. In very real measure he becomes the prisoner of his frame of reference. Too strenuous effort to escape from this administrative prison would almost certainly result in the loss of his effectiveness.

My point here is not to say that the president may, by alibi of some sort of ineluctable determinism, be excused from his mistakes. It is rather to minimize his importance, or at least to put it in more accurate perspective. Of course, it is no accident that presidents are paid the highest salaries. It is only proper that they should be. But it must be realized that they do not personify their institution's character. We are too prone to say, to use my own institution as an example, ". . . there was President Elkins and then President Holcomb and then President Smiley and now President Ray," as if this told the story of the institution. It would be much more significant to say, "The institution from its founding has been a part of the University of Texas System, sometimes with and sometimes without a chancellor," or "The college is located in El Paso, a teeming metropolis in a rich valley surrounded for hundreds of miles by arid lands and connected with its own state only by a narrow neck of land," or "One hundred

eighty degrees of the horizon viewed from the college campus are in an alien land."

The state college president is an administrative official. There is an established scope of his responsibilities and his authority. The problems he faces as an administrator are shaped and colored by the fact that his institution is public (and thus does not have to show a profit but at the same time is everybody's business); by the fact that the core of his organization is a collegiate faculty (rather than bank employees or men in military uniform). But, withal, his position is highly comparable to that of all administrators in other lines of work.

Men in all walks of life give thought to the problems of administration. Some such thought is random, while in other cases it is, at least in intent, systematic. Most of the knowledge applied in public administration, and in business administration too, is derived from experience. To illustrate this point: We often hear it said that there is no system of education in the United States. The fact is obvious, however, that educational organization, whether at the collegiate level or in public schools, tends to follow definite patterns throughout the country. These patterns derive, not from the thinking of one person, but from a sort of osmotic assimilation of experience. The result is a consensus concerning the best way of getting educational work done. In particular situations, adjustments in organization and procedures are made to accommodate to special requirements and programs, to desired emphasis on particular facets of activity, or possibly even simply to make the system work. There is, however, a large body of understanding within which we fulfill our missions. Insofar as this is true, administration is becoming a science which can be used as a basis for analysis that leads to even clearer understanding.

An aspect of administration that is not always neatly evaluated is that the administrator's work is never done. We customarily rationalize this phenomenon as a sort of perverseness of fate. I think the heart of the matter is that our associations with one another—students, faculty, and administrators—ebb and flow constantly, and a great deal of doing is required to keep our relations going smoothly. In a manner of speaking, the earth under us moves, and we must hurry to keep abreast of the place where we want to be. Whatever the causes, the fact is that the pressing duties facing the president of a state college in 1940 were as numerous and perplexing as are those of the president of the same college in 1960. Latter-day problems seem to us always more difficult, but I doubt that such is the case. It appears also to some that at a given day or time all problems will be solved; but a moment's reflection will force one to conclude that the day of a president, whether he preside over a college, a bank, or an industrial corporation, will be as busy, difficult, and hazardous twenty years from now as it is today.

One of the most significant facts with which public administrators have to deal, whether in state or national government, in institutions of higher learning, or in business, is the apparently inexorable trend toward complexity. The bureaucracy of our Federal Government has become so varied and far-flung that it has become commonplace for the government to be derided and disparaged as a congeries of hopelessly divided, bungling, and timeserving incompetents. All who are intimately acquainted with a state university system recognize it as an infinitely complex administrative establishment. Any one of the problems arising within the system might appear on its face to be comparatively simple. When, however, this problem comes to be weighed, evaluated, associated, and adjusted to the many other problems in

the system, and indeed in the state and the nation, it does not always prove to be so simple as it at first appeared. In such a system, beautiful theories, which appear at first blush to provide the perfect answer to unique problems, are often done to death by gangs of brutal facts that derive from association with other component parts of the larger organization. Many causes for this trend might be adduced. I think the principal one is our rising standard of institutional living. I do not choose here, however, to attempt a complete list of the causes of this trend, nor to moralize upon it, but rather simply to note it as a continuing phenomenon which bears increasingly upon the position of the state college president.

The duty of an administrator, at whatever echelon in the administrative establishment, is to bring into focus upon each problem all available intelligence and to weld it into a coordinated whole. In a free country such as the United States, where expression of opinion is a privilege held by all, broad intelligence must inevitably be applied to the solution of problems. A dictator, whether in Hitler's Germany or in a state college, may rule by some occult intuition, but his decisions almost invariably are faulty for ignoring important considerations that should have been weighed. In the dictatorship, the avenues of approach to higher administrative echelons are more tortuous and are fraught always with the hazards of caprice. This is but to say that more accurate performance can be achieved in an atmosphere of free interchange and that the ancient assumption that dictatorship is more efficient is clearly fallacious. It follows from this conclusion that channels of communication are better kept free and that broad involvement of staff in decision making has many advantages.

As a rule, persons established at higher echelons in the administrative system are better able to generalize on specific issues and to gain a clearer perspective concerning the impact that a given course of action might have upon other parts of the organization or upon the organization as a whole. The advantage they enjoy derives as well from the broader sweep of their responsibilities as from their natural or acquired abilities. Thus, for example, the part which an instructor plays in arriving at a decision is rarely as substantial as that of his department head. It is false to assume, however, that the president of a college, even though he might be better capable of generalizing and of seeing the establishment as a whole, actually makes administrative judgments entirely from within his own intellectual resources. The process through which he performs his functions is infinitely involved. He is guided not only from lessons he has learned in the past, but also from what a young instructor said to him at a faculty reception; from established positions and attitudes taken by the faculty council; from the need for funds to pave the campus streets; from the desperate straits into which some area of the academic program has fallen; from the attitudes of department heads and deans; from the discussions and decisions in faculty committees and administrative councils; from the opinions of people in the community in which the institution is located; and, last but not least, from the best assessment he can make concerning the course of action that would be most acceptable to the administrative hierarchy within which his institution must operate. To be sure, he does not tab these items at times of decision and check them off as an airplane pilot does before his take-off, but they and many other comparable influences have a direct and substantial impact upon the way he performs his duties.

With some reflection, then, we may conclude:

1. That a college is a complex of established procedures, produced by the interplay of many factors down through the years of its existence.

2. That a collegiate administrator cannot depart far from the established frame of reference in which he finds himself. He is imprisoned by the facts of the place where he is.

3. That the college president does not personify his institution, as we sometimes romantically assume.

4. That the college president's administrative position, after the distinctive aspects of his institution's life are taken fully into account, is similar to that of any other administrator.

5. That any person charged with the task of getting things done owes a tremendous debt to the experience of his entire civilization, which has produced, largely through the process of trial and error, most of what we know about administration.

6. That the administrator's work is never done.

7. That the trend toward complexity of administration, both public and otherwise, continues apace.

8. That the administrator's prime duty is to marshal and coordinate intelligence toward the solution of problems.

9. That dictatorship, by necessarily clouding the channels through which personal communication travels, produces a faulty product.

10. That the administrator's decisions are the product of the institution he serves and that, while his voice is doubtless heard more often above the tumult, it is only a part of the voice of the institution.

THE MOST important thing that can happen in any institution of higher learning is *learning:* learning to think, to relate, to do. This process, seldom easy, involves the teacher-scholar as well as the student. It derives from many factors: native curiosity and the concern to know and understand, stimulating teaching, adequate preparation of the student for the work he confronts, effective tools with which to work, and an ethos conducive to intellectual effort. Essentially, at whatever level, it is the interaction of mind on mind.

This interaction may occur in the lecture hall or the tutorial meeting; it may be the product of reading or of a laboratory assignment, or of a televised presentation. No one method can *assure* learning, but experience suggests that some methods are likely to be more effective than others. They may vary with the nature of the educational enterprise or even with fields of knowledge, but, once determined, they should be embraced at all costs. So important is the end in view, both to the individual and to our free society, that true economy dictates the choice of the most effective rather than the least expensive means.—From *The Price of Excellence: A Report to Decision-Makers in American Higher Education*, published by the American Council on Education, October 1960.

Academic Tensions

BEN EUWEMA

It is clear that one characteristic phenomenon of American higher education these days is a growing tension in the relationships of faculty and administration. As might be expected, the situation tends to be more serious and tangible in our larger institutions, although it is certainly not entirely unknown in the smaller ones. It is not unlike the relationship which existed between the secular clergy and the regular clergy in the Middle Ages.

The growing tension is indicated by the large number of dissatisfied faculty members and administrative officers and by the statements, constantly reiterated on both sides, to the effect that "they don't really understand us." Members of the administrative staff blame the faculty for modes of behavior and attitudes which are simply professional characteristics, whereas members of the faculty accuse the administration for actions which are clearly beyond the responsibility or capability of that group.

By and large, the chief administration complaint is that certain members of the faculty do not take their responsibilities seriously enough—advising, for example; attendance upon classes and general departmental and university functions; and so on. On the other hand, the members of the faculty feel that the administration is responsible for low salaries, insufficient office space, and inadequate facilities; furthermore, the administration is accused of not appreciating the nature of the university, of being too responsive to public pressures, and of stressing quantity instead of quality.

We can admit, at the outset, that some of these strictures are deserved, at least in some places and at certain times. However, the mutual recriminations are, at least to a degree, neurotic; and we should look for causes.

There are actually a fairly large number of causes for the phenomenon. Of these, perhaps the most obvious one is simple misunderstanding. When the faculty and the administration are at odds, sometimes the difficulty may reside in the fact that no one is quite certain as to who are the faculty and who are the administration. Obviously, the professor of Sanskrit (who is not also a department head) is a member of the faculty; the president (unless he is also a professor) is a member of the administrative group. But what of the department heads? the registrar? the academic deans?

When someone blames "the administration" for encouraging, or permitting, low academic standards, whom does he actually have in mind? It is all very vague. All we can certainly know is that the speaker is blaming someone other than himself. On the other hand, when a dean says that the faculty attitude toward teaching is "frivolous and unprofessional," whom exactly does *he* refer to? Certainly, one hopes, not to every classroom teacher. It is more likely that he is referring to a particular instructor whom he has reprimanded recently for laxity in class attendance.

These are perhaps relatively minor causes of tension in themselves, but they become serious as soon as we begin, first, to generalize about them and, second, to act upon them. Whereas the logical leap from one instance to a universal judgment will earn the student in Logic A a failing grade, his elders (unfortunately) need pay no such automatic penalty for their logical confusion.

A second cause of the difficulty is—let's face it—the regrettable fact that, by and large, the faculty and the administrators turn their worst faces toward each other. Like incompatible marriage partners, they inevitably bring out the worst in each other. Here is an example so familiar as to be recognizable to any member of a university family.

The business manager will have reason to meet the university's ranking Egyptologist, in any official way, only when the latter is embroiled with the campus police. Last week, for example, the business manager's office sent around a notice requesting everyone to refrain from parking in Lot Q for two days in order to give Plant Operations a chance to remove the snow. The Egyptologist never reads his mail, or very seldom; and so he simply will never see the notice. He will, of course, be the first to complain if the snow is not removed; nevertheless, he will park as usual in Lot Q, also (as usual) straddling two stalls. Even so, no one can adequately describe his fury when he finds a police sticker under his windshield wipers. The business manager to whom he complains can hardly avoid the conclusion that the Egyptologist is not entirely bright.

He is, of course, quite wrong; for the Egyptologist is a genuinely distinguished scholar and one of the true ornaments of the university. Next week the shoe will be on the other foot: the scholar will meet the business manager at a reception. Forgetting his pique, he will refer conversationally to a recent archaeological expedition, only to be appalled at the business manager's epic ignorance of the whole business. What is even worse, the business manager will actually seem not to be embarrassed by his ignorance.

Now they are both able and devoted servants of the university; each is, in his own way, extremely valuable to the whole enterprise. And yet neither understands or appreciates the other. Each thinks the other unreasonable and unintelligent. The business manager generalizes on the basis of his own slight experience; so does the Egyptologist.

A consequence of this phenomenon is the sort of professional parochialism or myopia with which we are all familiar. The professor often does not know what the administrative officer is supposed to do, nor does the administrative officer always fully realize what it means to be a professor.

The professor should know that a large, complex university simply cannot manage itself in a light-hearted medieval fashion. Most American universities are engaged in a number of highly complex and bewilderingly different ventures. For instance, the university must provide food and lodging for six thousand students. The living and dining facilities must first be financed, then built, and then operated with a very small margin of profit or with no profit at all. A doctor's degree in topology or in ancient history hardly prepares a man to operate or criticize a hotel business of such magnitude. Furthermore, the university has a campus of five hundred acres, studded with 100 millions of dollars worth of buildings—classrooms, laboratories, offices, and the like. These buildings have to be planned, financed, built; and then heated, lit, and ventilated. The grass must be planted, fertilized, and cut; sidewalks must be maintained; water and sewage disposal must be provided. Meanwhile, someone must register the students, keep their records, and arrange for their transfers or graduation; someone else must pay the faculty, administer the institution's finances, and keep books on the whole enterprise.

And so it goes. It is, of course, easy enough to complain about the proliferation of administrators and the burgeoning of bureaucracies. Parkinson is always relevant, and it is fashionable to be

quite arch about Parkinson's Law at the faculty reception. Nevertheless, the nature of an academic institution becomes daily more complicated. To cite only one other rather simple example: When I began to teach in 1928, I received annually ten pay checks, each for $200; the total was my $2,000 salary. There was not a single "withholding." Today, on the other hand, there are deductions for retirement, health insurance, "major medical" insurance, life insurance, income tax (federal), income tax (municipal), social security, and perhaps a few others. Someone has the task of computing all these sums, allocating them properly, reporting the allocations, and writing the (reduced) checks. What a single clerk did in 1928 now requires an office full of clerks and a battery of IBM machines. We may all regret the growing complication of academia, but none of us can reverse an irresistible trend.

Nevertheless, older members of the faculty are always harking back to the "good old days," when one clerk in the registrar's office enrolled every student in the institution and when the president's secretary signed the entire payroll once a month. Admittedly these were, in many respects, good old days indeed; but we can no more recapture them than we can rediscover our youth. And it is often a nostalgia for youth which invests the good old days with their glamour.

Certainly the most important development in university organization during the last half century is the growing isolation of the administrative officers from the members of the faculty. In the good old days, the president of the university knew personally almost all permanent members of the faculty; upon occasion he visited them in their offices and he saw them in his office from time to time; every member of the faculty participated regularly at the monthly faculty meeting at which the president presided; and every member of the university community attended certain social functions.

Of course, these things are no longer possible of achievement. It is possible for a man to become acquainted with a group of two or three hundred; it is impossible with a group of two or three thousand. Furthermore, the faculty has grown to be highly mobile, particularly since 1945. The president would now have to get to know not ten times as many individuals, but actually twelve or fifteen times as many.

The isolation of the two groups is, of course, automatically responsible for a great many misunderstandings. When you see a man periodically and know him personally, you are willing to give him the benefit of the doubt on the occasions when you feel he is acting unwisely. When, however, you see a person very rarely, if at all, what you hear about him at a cocktail party or read about him in the newspapers becomes "monstrous," "stupid," and "irresponsible."

This, at least partially, accounts for the administrator who feels that all faculty members are lazy and irresponsible and for the professor who feels that all administrative officers are anti-intellectual penny pinchers.

The misunderstanding arising from these conditions is partly responsible for the growing faculty-administration tension. But there are, of course, many other causes. One of them is a misunderstanding of the functions of the faculty, by both the administration and the faculty itself.

Because so many university officials are constantly engaged in conducting rather complex business enterprises, they run the danger of viewing the university as primarily a business operation. No error could possibly be more serious. It may be necessary to operate the university's housing facilities somewhat as though they were part of a hotel business; even here, of course, there is one very significant difference: the univer-

sity should not, or dare not either, earn a profit. However, to operate an academic department on "a sound business basis" would simply be to convict the department head of bad management.

In an academic enterprise, quality is everything. A good teacher—a really good one—cannot possibly be overpaid: it is impossible to put a monetary value on the sort of liberalizing of the human spirit that a really fine teacher can help to produce. Conversely, a poor teacher cannot possibly be paid too little: to pay him anything at all is to be guilty of an inexcusable overpayment.

The ordinary standards of the business community simply do not apply to the faculty. There is, for example, the matter of office hours. Here is Professor X, who spends eight hours a day, forty hours a week, in his office and classroom. You can set your clock by his schedule. Professor Y attends his classes and then disappears into the library stacks for the rest of the day. Professor Z divides his time equally between his classroom, his home office, and the library. Who is the most faithful and effective member of the faculty? The answer would seem to be easy enough; but actually there is no way of telling on the basis of the evidence given. What I have said about each of them may be interesting but it is actually irrelevant.

Professor X may be a "harmless drudge"—really, of course, if a "drudge," then most harmful! Professor Y may, after twenty years, write a book which, like *Das Kapital* or *Gulliver's Travels*, will enter into the common heritage of our culture. Professor Z may be a good, conscientious journeyman. The point about X, Y, and Z is simply that their real contributions to the university and to society cannot be described in any purely quantitative terms.

Therefore, in any "real" sense, these men cannot be administered, supervised, or directed. They can merely be coordinated or led. This is a hard lesson for a man trained in industry to learn. Alas, many so-called educational administrators never learn it; and so, inevitably, they fail. They may hope to gain the cheap bauble of efficiency only to lose the pearl of great price.

It must also be said that the confusion as to the proper role of the faculty is not clarified by the repetition of pious clichés on the part of faculty members themselves. "The university," we are constantly being told, "is a community of scholars." This is about as accurate as Carlyle's assertion that the university is "a collection of books." It is true, a university cannot exist without scholars or books; but to equate scholars and books with the university is about as meaningful as defining a man as a "concourse of atoms."

The university cannot exist without scholars, but neither can a modern university exist without buildings, laboratories, and hosts of dedicated bureaucrats, minor and major. A university needs some sort of legal status, certain machinery for bringing scholars and disciples into a "community." And a good university has a deep commitment to certain institutional goals.

A flourishing and healthy university also must provide for diversity within the community of scholars, disciples, and bureaucrats. As this diversity deepens, the sense of community may all but disappear. (One such crisis has been eloquently described recently by C. P. Snow.[1]) Nevertheless, the sense of community remains a highly desirable goal and—if American higher education is to reach its full potential—fundamentally necessary.

What it comes to, then, is that the complex American university requires for its effective operation several differently

[1] Snow, *The Two Cultures and the Scientific Revolution* (New York: Cambridge University Press, 1960).

oriented groups of people. I shall list the most important of these:

1. *The trustees.* These are public-spirited men and women whose primary responsibility it is to select the university president, review the institution's fiscal policies and practice, help the president keep the university operating in conformity with its charter, and, in general, promote the welfare of the institution in every possible way. The trustee is jealous of the university's reputation for academic freedom, academic excellence, and fiscal soundness. He renders his most important service when he helps to find an able president and a few generous millionaires.

2. *The president.* The modern university president may have to play a number of different roles, or he may select one role and concentrate mainly on it. That is to say, the president may be in turn the chief "promoter" of the institution, its chief fiscal officer, the leader of its research and instructional programs, the buffer between the institution and the legislature or alumni or general public, a national leader in higher education, or any single one of these or a combination of these.

The presidency of a modern, complex university is an awesome post. It requires a very rare combination of skills: scholarship, business acumen, salesmanship, diplomacy, and that indefinable aura of leadership without which everything else will be ineffectual. Because it is in the nature of his position to operate on many different fronts, the president constantly runs the danger of being misunderstood. And because he is desperately busy almost all the time, he must depend a great deal upon his assistants. It is a very fortunate—and rare—university president who will find in his assistants that curious combination of selflessness and expertness without which they will either overplay or underplay their roles—and thus fail to serve him and the institution most effectively.

3. *The business office.* Here again one is aware of a curious dualism. The chief business officer of the university must operate, in a businesslike fashion, an institution that is actually about as businesslike as marriage or the church. The basic efficiencies of big business must be understood and adapted to an institution which exists neither in order to gain the whole world nor to lose its own soul. At the same time, however, the business officers of the university must resist the impulse towards philanthropy—even though ultimately they know that the university exists to serve the most philanthropic of all purposes.

More important, for our purpose, is the fact that the business manager will have to deal with the general business community as well as with the faculty; with certain trustees who feel it immoral to do anything without making a profit, as well as with some students who feel that the world owes them everything. And somehow whatever is done—however "commercial"—must assist in the achievement of the university's spiritual objectives. Therefore, for example, it will not be enough merely to house the students in dormitory-hotels; it will be essential to house them in educational and educative communities so that one member of the group may have the benefit of interaction with others of the group, and so that even here the spiritual objectives of the university may be served.

4. *The student body.* Note that we are using here a curiously biological term. For when we say *student body,* we imply an organic wholeness. Like many other academic phrases, this one is highly idealistic in denotation; nevertheless, now and again, in our better institutions, the ideal is approximated.

The individual student, who helps to form the "body," to complicate matters somewhat more, is half boy and half

man. He will never achieve maturity unless he is treated as an adult; but he is, in fact, neither infant nor adult, but something in between. The same confusions that befuddle his elders in the university community disturb him. On the one hand, his task is made much more difficult than theirs because, as a student and an adolescent, he must survey the whole of creation and make up his mind about it; on the other hand, he must earn a living in the world as at present constituted. He must be *in* his time but not always exactly *of* it. A university education worthy of the name should permit him to see, as from the perspective of an enormous distance, the machinations of men and nations as well as the stately procession of the stars. And yet even this very disinterestedness must be instilled and encouraged by men and women of the faculty who are themselves wage-earners, citizens, fathers, mothers, voters, taxpayers, members of minority groups, churches, and political parties—who are alternately wise, foolish, credulous, skeptical, happy, despondent, objective, and highly "engaged."

Of course, the student's confusion stems from a noble source: the disparity, increasingly obvious to him, between the *is* and the *ought*, the factual and the ideal. Alas, too soon, he will learn to accept the universe as it is; but, until the day of this unhappy capitulation, he will not be easy to live with.

He will discover, in the high-flown language of the catalogue, certain statements of intent which he will measure against the university's actual accomplishment. He will rail at the natural human frailties of his professors, and he will assume axiomatically that the business office exists to bedevil him and to earn inordinate profits at his expense.

5. *The faculty.* It is my point that all of the elements of the university community are essential to the success of the enterprise. Among these, certainly the one completely indispensable group is the faculty. There is at least that much truth in the ancient cliché—"the university is a community of scholars." In academia, as in Orwell, all are equal, but the faculty is more equal than the others.

The effective member of the faculty is not a tradesman or a mere jobholder. It is possible for a man to work as a salesman or as a plumber for 40 hours a week; during the remaining 128 hours he may completely forget about his job. This is not true of the professor. He "professes" 168 hours a week—all the time, in fact. He lives a certain kind of life because he is, in the first instance, a certain kind of person. He is, first and foremost and all the time, a scholar; and it must be said that a scholar has certain unique attributes. He sees, with exceptional clarity, the principles of his own specialty, but not necessarily those of any other scholar. This fact always disturbs the conscientious student and the members of the administration. They expect a chemist to be sophisticated about chemistry, of course; and so he is. But they also expect him to be sophisticated about ceramic technology or Greek literature; and, very often, he is not. The extreme concentration that expertness in a specific discipline demands may militate against a sympathetic appreciation of all other disciplines. The professor's narcissist complex must be clearly understood so that the proper allowances may be made. In a general faculty discussion of course requirements, therefore, the professor of physics will tend to be just about as objective about physics as the judge of a beauty contest whose beloved is one of the contestants.

However, without this imbalance, the professor will never be worth his salt. He is engaged in order to profess his subject—not everyone else's. The corrective, if one is necessary, comes from

the interaction of various specialists, one with the other. A faculty, viewed in this light, is similar to the Congress: a congeries of pressure groups, each representing his own interest but each willing, if necessary, to compromise with the others. This is merely to say that democratic procedures are essential to the successful operation of a university faculty.

It is almost unnecessary to add that, without complete freedom of thought and expression, the faculty member cannot hope to play his proper role in the university community. This is especially so since, on the whole, members of the faculty tend to be rather more timid than other members of society. Academia is still partly a cloister; and some of us chose to become academicians out of a desire to escape the rough-and-tumble of the outside world. (It does not weaken my argument to note that often the tranquility one looks for in academic life is an illusion!) Therefore, it is often possible to cow a professor very easily; as a matter of fact, sometimes he is afraid of what he *thinks* the trustees or the president thinks he thinks. He must constantly be reassured that his own mature, considered judgments, because they are based on sound scholarship, are of great importance to society and should, under no conditions, be suppressed or modified. One of the chief duties of the administrative officers of the university is to see that the professor speaks out boldly and clearly on important matters.

The mere recognition of a few causes of faculty-administration tension and an indication of the true functions of each group will not, of course, appreciably lessen the tension; but they may help. If everyone recognizes what everyone else is expected to contribute to the university community, he may not therefore love his fellow men more; but he may learn to respect them. In this instance, that is just as good.

Policies and Practices in Faculty Evaluation

JOHN W. GUSTAD

Introduction

Indeed, it is no exaggeration to say that the most critical problem confronted in the social organization of any university is the proper evaluation of faculty services, and giving due recognition through the impartial assignment of status.

—Logan Wilson

THE YEARS passed since Wilson made the statement above in *The Academic Man*[1] have made the need for achieving better faculty evaluation more urgent than ever. While the problems have increased exponentially in the wake of expanded enrollments, increased numbers of faculty, extended specialization of knowledge, and much greater diversity of institutional tasks, pitifully little has been done to provide for a rational and effective set of policies and procedures for identifying merit and rewarding it appropriately.

This writer has shown elsewhere[2] that college teachers tend to be internally motivated (or, in Riesman's terms, inner-directed): they persist despite considerable opposition and numerous obstacles in courses of action directed toward goals which they feel are important. At the same time, they are not insensitive to a variety of pragmatic considerations which impinge upon them. Newburn has put the case very well:

> One quality seems to characterize the young professor—he is a pretty intelligent person, and, when it comes to an assessment of his future development, rather pragmatic in approach. If they want publication, they will get it, and if they want quantity, they will also get that. Time enough for the more substantial efforts after reaching senior rank. With relatively few exceptions, reports indicate such willingness to adapt to circumstances, at times, of course, with real tinges of conscience or regret.[3]

The difficulty inherent in this situation is that evaluations and the personnel actions based on them are made by one group, the administration, in terms of its beliefs about what the other group, the faculty, actually does and, perhaps more important, wishes to do. Unfortunately, as this writer has shown,[4] the extent of agreement between faculty members and administrators with regard to what faculty members do and what they would like to do is distressingly close to zero. The area causing greatest concern (with attendant frustration and unhappiness) is the identification and rewarding of good teaching.

There are at least three major reasons for this. In the first place, there is a vast and growing communications gulf between faculty members and administrators. This has been shown recently by Newburn,[5] Wood,[6] and the present writer.[7] Such a gulf obviously fosters

[1] New York: Oxford University Press.

[2] John W. Gustad, *The Career Decisions of College Teachers* (Atlanta, Ga.: Southern Regional Education Board, 1960).

[3] Harry K. Newburn, *Faculty Personnel Policies in State Universities* (Multilithed; Missoula: Montana State University, 1959).

[4] Gustad, *op. cit.*

[5] Newburn, *op. cit.*

[6] Louise A. Wood, "Conditions of Work for College Faculty and Administrators" (in progress).

[7] Gustad, *op. cit.*

misunderstanding and suspicion about motives. If, indeed, evaluating faculty performance is a matter of first-order concern to both groups, a first step would seem to be to seek diligently for all possible means of improving the essential communication and establishing the rapport that is a prerequisite to any fruitful joint efforts toward finding a solution.

Related to this is a second reason. Increasingly, faculty members are identified with disciplinary or professional groups whose interests are not necessarily coterminous with the interests of any particular institution. Each department seeks aggrandizement, measured in terms of number of faculty, number of major students, courses offered, etc. More critical is the fact that, to a very considerable extent, faculty evaluation has in fact passed into the hands of the disciplinary and professional societies and out of the institutions'. A faculty member wishing to rise rapidly through the ranks learns that becoming known among the leaders in his discipline is a good way to obtain job offers; these, in turn, can be used as "leverage" in the home institution to speed up the promotion process. Unfortunately, the societies know little (and usually care less) about a man's teaching ability (beyond the barest minimum). Reputation in the societies is attained by publication, reading papers, and working on committees. The tacit abdication of the responsibility for evaluation is proceeding rapidly and seems to be the result of a failure on the part of presidents and deans (department chairmen more often represent the interests of the professional society) to develop viable policies and procedures of their own for evaluating faculty merit. As long as the locus of evaluation remains so much with the professional societies, pious statements in catalogues about the importance of teaching will be viewed increasingly with a cynical and jaundiced eye by faculty members who know the facts of life.

A third reason is, for want of a better term, technical. That is, there is a widespread belief that the evaluation, particularly of teaching, is in fact impossible—if not also slightly distasteful. Newburn quotes one vice-president as follows: "There's too much emphasis on productivity, but I don't know how to avoid it. You can't get a critical review of teaching. In fact, judging by reports, there are no poor teachers in this university." Newburn then continues, saying, "Thus, productivity is emphasized not only because of the positive belief of many officials that it is the most important element . . . but also for the negative reason that it can be evaluated more readily than another important quality—namely, teaching." [8]

As will be shown later in this report, this belief that teaching cannot be adequately evaluated (and, some say, *should* not) is very widespread. It probably accounts for the power vacuum into which the disciplinary societies have moved. While the evaluation of faculty members, particularly of their teaching, is indeed an extremely complex matter, not likely soon to be susceptible of precise, quantitative solution, the excellent report by Ryans [9] is a clear demonstration of the real progress that a careful and imaginative investigator can make. A perfectly reliable and valid system of evaluation may, in fact, be for the foreseeable future unattainable; nevertheless, the history of learning, particularly of science, would seem to support the notion that, given time, effort, and the kind of critical appraisal that identifies blind alleys, reasonable approximations to a goal *can* be obtained.

[8] Newburn, *op. cit.*

[9] David G. Ryans, *Characteristics of Teachers* (Washington: American Council on Education, 1960).

Background and Method of the Study

It has been said that giving advice is like kissing; it costs nothing and is a pleasant thing to do . . . the analogy has some relevance . . . in that (1) everyone feels qualified to practice kissing and most everyone does at some time; (2) the objectives of kissing are usually not clearly stated but are not entirely intangible; (3) kissing itself is apt to be so satisfying that there is little tendency to evaluate it otherwise.

—Paul Dressel

At its meeting in the spring of 1960, the Committee on College Teaching of the American Council on Education considered several proposals from members regarding projects that might be undertaken. After some discussions, it seemed that the evaluation of faculty members was an area deserving attention; accordingly, plans were made to proceed by first of all obtaining some sort of picture of evaluation practices now in use.

There was little or no feeling among members that the committee ought to try to develop one or more specific recommendations for faculty evaluation. This is something which must be worked out by each institution in terms of its own situation and its own goals. However, as one member remarked, programs of faculty evaluation reflect quite directly each institution's philosophy of education. That is, the factors considered in evaluation are to some extent a description of the kinds of faculty members the college or university wishes to have. Therefore, it was felt that an analysis of the assumptions underlying various methods of evaluation might provide the basis for a set of recommendations or guidelines of use to institutions wishing to develop improved programs for faculty evaluation.

Following the meeting, a questionnaire was developed by Dr. Nicholas C. Brown, staff associate of the Council, and the writer with the assistance of Dr. Elmer D. West of the Council's Office of Statistical Information and Research. Questionnaires were distributed in July to all collegiate members of the Council along with a covering letter from President Arthur S. Adams explaining the project.

By the end of October, a sufficiently large number of completed questionnaires were on hand to permit beginning the analysis. Table 1 contains a summary of the numbers of questionnaires, divided by type of institution, included in the analysis. In addition to the questionnaires themselves, quite a number of faculty manuals and committee reports were included. There was no way of coding these, but they were read, and the impressions gained from this reading are included in the following pages. The questionnaire responses were coded, and the summaries of the analyses are included in the remaining tables.

TABLE 1: NUMBER OF INSTITUTIONS (BY TYPE) INCLUDED IN THE ANALYSIS

Type of Institution	*Number Included*
Liberal arts colleges	272
Private universities	68
State universities	62
State and municipal colleges	90
Teachers colleges	29
Junior colleges	25
Professional and technical institutions	38
Total	584

Loci of Evaluation

Perhaps the most useful attributes of a dean, after all, are patience and low cunning.

—William C. DeVane

In any consideration of faculty evaluation, a principal question is: Who makes such evaluations? Of special concern is identifying those who make the *effective* decisions rather than those whose role is more or less *pro forma*. In many institutions, for instance, the president is required to pass on any recommendations for rank or salary increases but, lacking any real knowledge of candidates' qualifications, he actually makes his decisions on the basis of institution-wide budgetary considerations.

Question I-A was designed to elicit the information required. Table 2 summarizes the results of the analysis of responses to this item. It is apparent that, in the large majority of institutions, those principally responsible for evaluation are the president, the dean, and the department (or division) chairman. Of the three, presidential involvement appears to have the greatest variation, from 100 percent in the case of the teachers colleges to just over two-thirds among the state universities. In the case of the other two officers, the deans are more often involved than chairmen in all but the technical and professional institutions. Only in the case of the junior colleges does chairman involvement drop significantly.

The figures for vice-presidents are to some extent a function of the fact that, in certain types of institutions, this office is not in existence. Where it is, the vice-president is usually involved.

The allegedly small extent of involvement of committees, whether departmental or of the entire faculty, is of interest. The writer is inclined to suspect that, at least for departmental committees, there may have been some downward bias owing to the fact that questionnaires were typically completed by deans or presidents. Committees of the whole faculty are likely to be known to the central administration, but this is not necessarily so of departmental committees, which may operate effectively but informally.

The individuals included under "other"

TABLE 2: INDIVIDUALS RESPONSIBLE FOR EVALUATING FACULTY MEMBERS

PERSON(S) RESPONSIBLE	TYPES OF INSTITUTIONS, BY PERCENTAGES[1]						
	Liberal Arts Colleges	Private Universities	State Universities	State Colleges	Teachers Colleges	Junior Colleges	Technical–Professional Colleges
President	86	68	69	88	100	76	79
Vice-president	10	59	55	16	0	24	24
Dean	85	96	92	93	86	80	84
Chairman	70	88	97	88	83	44	92
Department committee	3	28	40	16	10	0	13
Faculty committee	20	31	23	14	28	4	16
Other	23	40	32	24	10	24	8

[1] In this and subsequent tables involving percentages (of numbers shown in Table 1), entries have been rounded to the nearest whole number.

varied widely. Most frequently mentioned were the following:

Liberal arts colleges: Committee on Rank and Tenure (which presumably should have been included under faculty committees above); the Academic Council; Trustees; the Administrative Council.
Private universities: Committee on Rank and Tenure; Administrative Council.
State universities: Promotions Committee; Administrative Council.
State and municipal colleges: Committee on Rank and Tenure; Administrative Council.
Teachers colleges: None with any frequency.
Junior colleges: Administrative Council.
Professional and technical institutions: None with any frequency.

Adding the Committees on Rank and Tenure to the tabular entries for faculty committees raises them somewhat but leaves faculty committees well behind presidents, deans, and chairmen as makers of evaluations. Reactions to this situation will vary depending largely upon position and coign of vantage.

In order to obtain another view of this problem, question I-B was asked. Here, rather than make the relatively noncommittal check marks as in I-A, institutions were requested to describe the typical process for nominating, approving, and notifying an individual for promotion. Paradoxically, the pattern of replies was at once so common and so diverse that coding and statistical analysis seemed inappropriate.

The common element might be characterized as follows: upon recommendation of the chairman, the dean evaluates the candidate to decide whether or not to forward the matter; if he forwards it with a positive recommendation (such matters are virtually never forwarded except with a favorable recommendation), the actual, final decision is usually made by the next higher officer, usually in consultation with the dean. Presidential review was almost always specified, but, especially in the larger institutions, this review is typically made in the absence of any substantial knowledge about the candidate and rests heavily on considerations of available funds. Beyond the president, the trustees must approve, but, except in rare instances, this action is *pro forma*. With some frequency, others (see above) are involved, most often the Committee on Rank and Tenure and/or the Administrative Council.

Most of the statements began, "Upon recommendation of the chairman. . ." The initiative seems in most cases to rest at this level. The present study provides little or no information about how chairmen operate in this situation, but it is a problem well worth studying. As will be seen, the data available to deans, presidents, and others leave a good bit to be desired. Much of the data, so-called, actually comes from chairmen. It appears to be quite unusual for a dean or a president to reach past a chairman to initiate a personnel action, at least one involving promotion. There may be good reasons for this. In many larger departments, the chairman's role resembles in some ways that of the dean: that is, recommendations are originated by senior professors and passed on to him. The main point seems to be this: the critical test of the location of the real authority is where the process is initiated. By initiating or not initiating, a chairman is in a position of real authority. As a number of writers have noted, he is in a position to obfuscate policies arrived at elsewhere.

By and large, the extent of real decision making on the part of deans and presidents is highly correlated—inversely—with the size of the institution. What seems to be involved is what social psychologists refer to as primary groups. The size of such primary groups is decidedly limited. Beyond the critical size (a dozen or fewer), subgroups form, each having a certain identity, cohesive-

ness, and focus. Most departments are smaller than a dozen, but very few colleges are. Only one who is actually a member of a primary group is in a position to have at hand all of the relevant data required. Outsiders must perforce rely on secondary data of whatever quality that may be. In pursuance of their own goals, groups tend to assert and insist upon the validity and inviolability of their own judgments and to make available to "outsiders" only information that will tend to support these. The limiting size of a primary group being one, it is easy to see at least one basis for the "professor's classroom in his castle" idea, which has such currency and appeal. If he can undermine confidence in the evaluations of the only observers present, the students, he is then in a position to make and proclaim his own evaluations. Since chairmen are typically members of one or more primary groups, it is not surprising that their evaluations reflect this situation. Deans and presidents, on the other hand, are members of other (and alien) groups. The critical moment in evaluation would seem to be the meeting between the chairman and the dean. No apparatus of evaluation can have any real hope of improving the present situation unless it takes this fact into account.

Factors Considered in Evaluation

It was assumed that classical learning and literary ability would fit any candidate for any administrative post. It was assumed (no doubt rightly) that a scientific education would fit a candidate for nothing—except, possibly, science. It was known, finally, that it is virtually impossible to establish an order of merit among people who have been examined in different subjects. Since it is impracticable to decide whether one man is better in geology than another man in physics, it is at least convenient to rule them both out as useless. When all candidates alike have to write Greek or Latin verse, it is relatively easy to decide which verse is best.

—C. Northcote Parkinson

Turning from the loci of decision making, the next matter has to do with the factors considered in making evaluations. Questions II-A and II-B asked for the required information. In II-A, respondents were asked to indicate the relative importance attached to various factors, ranging from "high" to "none." In analyzing the responses to this item, numerical weights were assigned so that "none" (or "not applicable") carried a zero; "low," a one; "average," a two; and "high," a three. This method of summated ratings yields a reasonably good picture. Weights for each factor were summed, and the sum was divided by the number of responses to give an arithmetic mean for each. Then, within each category (liberal arts colleges, private universities, etc.), factors were ranked in terms of mean scores, a rank of one being assigned to the one with the highest mean, a fourteen to the factor with the lowest. These ranks make identification of the most important factors easier, and they also permit calculation of intercorrelations (see Table 4).

Table 3 summarizes the analysis of item II-A. Without exception, all seven types of institutions said that classroom teaching was the most important factor in evaluation. Mean scores show that virtually all of the ratings on this factor were in the "high" category. The factor with the next highest average ratings was "other." Actually, this item was

TABLE 3: FACTORS CONSIDERED IN EVALUATING FACULTY MEMBERS

FACTOR	TYPE OF INSTITUTION															
	Liberal Arts Colleges		*Private Universities*		*State Universities*		*State Colleges*		*Teachers Colleges*		*Junior Colleges*		*Professional and Technical Colleges*		*Total*	
	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
Classroom teaching	2.97	1	2.96	1	2.91	1.0	3.00	1.5	2.97	2.0	3.00	1	2.95	1	2.97	1
Supervision of graduate study	.94	13	1.70	10	2.35	5.0	1.42	11.0	1.42	11.0	.13	14	1.55	11	1.36	11
Supervision of honors	1.14	12	1.25	13	1.35	12.0	.90	14.0	.86	14.0	.57	12	.61	14	.95	14
Research	2.02	8	2.53	3	2.82	2.0	1.95	8.5	1.66	10.0	.78	10	2.31	3	2.02	5
Publication	2.08	6	2.41	4	2.70	4.0	1.95	8.5	1.76	8.5	.96	9	2.21	5	2.01	6
Public service	1.72	10	1.54	11	1.77	9.5	1.79	10.0	1.79	7.0	1.61	8	1.68	10	1.70	10
Consultation	.93	14	1.22	14	1.31	13.5	1.22	12.0	1.24	12.0	.52	13	1.37	12	1.12	12
Professional society activity	2.00	9	1.88	7	1.86	7.5	2.04	6.0	1.83	6.0	1.65	7	1.92	7	1.88	8
Student advising	2.40	4	2.21	5	1.86	7.5	2.37	4.0	2.14	4.0	2.52	4	1.95	6	2.21	4
Committee work	2.03	7	1.87	8	1.77	9.5	2.14	5.0	1.93	5.0	2.09	5	1.84	8	1.95	7
Length of service in rank	2.17	5	1.82	9	1.45	11.0	1.98	7.0	1.76	8.5	1.78	6	1.76	9	1.82	9
Competing offers	1.19	11	1.35	12	1.31	13.5	1.03	13.0	.93	13.0	.70	11	1.08	13	1.08	13
Personal attributes	2.49	3	2.15	6	1.98	6.0	2.49	3.0	2.28	3.0	2.61	3	2.29	4	2.33	3
Other	2.91	2	2.57	2	2.86	3.0	3.00	1.5	3.00	1.0	2.86	2	2.88	2	2.87	2
Total Mean	1.93		1.96		2.02		1.95		1.83		1.56		1.89		1.88	
Total Variance	4.13		4.11		4.44		4.19		3.71		3.27		3.93		3.87	

used frequently when number 13, personal attributes, should have been, since most of the content dealt with these. For example, such items as cooperation, loyalty, Christian character, church membership and activity, and compatibility showed up fairly frequently. Since the personal attributes factor was third highest in over-all ratings, it is apparent that, if these responses are combined with most of those included under "other," the factor personal attributes is the second most important after classroom teaching.

A few other things were included rather infrequently under the "other" item: progress toward (or attainment of) the doctorate, community service, intellectual vigor, and administrative ability. None of these, however, approached the frequency with which the personality traits above were mentioned.

Research and publication follow student advising in importance. In both research and publication, there was some considerable variation among the various types of institutions. The private and state universities and the professional and technical institutions place these activities quite high; the others place them well down in the middle or below. This, of course, reflects the well-known fact that most research is done in the universities; less (comparatively little), in other institutions.

Near the bottom in terms of rated importance are such factors as supervision of graduate study, supervision of honors programs, consultation, and competing job offers. Only the state universities rated supervision of graduate study high. Otherwise, for the other factors near the bottom, there was substantial agreement among the various types of institutions.

Two other analyses were performed on these data. For each type of institution, total means and variances were computed. The means give an indication (admittedly rough) of the over-all intensity of the reward system. Put another way, they reflect the number of factors rated toward the high end. Thus, an institution rating only one or a few items high would have a lower total mean than would one rating several factors high. Although the differences among the seven means are not great, they are large enough to suggest some intriguing hypotheses. Junior colleges (total mean = 1.56), for example, appear to put most of their eggs in one basket (classroom teaching) and pay relatively little attention to most other factors. While junior colleges earn high scores on such factors as classroom teaching, student advising, committee work, and personal attributes, which are consonant with their announced philosophy, they are dependent on relatively few factors in evaluating their faculties when compared with other institutions. At the other extreme, the state universities pay considerable attention to a wide range of factors. From these, one is led to speculate about the effects of the range of reinforcement on faculty members. In the one case, it is narrow; in the other, broad. Put another way, the state universities appear to be relatively much more demanding with regard to faculty performance on a fairly broad spectrum of activities.

The variances were computed to get at this in a slightly different way. The differences are fairly substantial and reflect the narrowness or breadth of concern with the various factors. Again, the variance for the state universities is largest; that for junior colleges, smallest. This tends to substantiate what was said above about the relatively greater demands, over a wide range of activities, placed on the state university faculty member as compared to the junior college faculty member. Whereas the means show the average *intensity* of concern, the variances show the *range* of concerns with various factors.

Another way of evaluating the similarities and dissimilarities among the various kinds of institutions is shown in Table 4. Here, rank-difference correlations were computed and an intercorrelation matrix generated. As a kind of crude index of communality, the ranks for the total group were included so that divergence from this average might also be seen. Interestingly, the type of institution most closely approximating the average or typical case was the professional and technical. The least common category was made up of the state universities. No attempt was made to analyze the matrix statistically; examination of it will suggest some interesting hypotheses. In general, similarities appear to be greater than differences.

TABLE 4: INTERCORRELATIONS (rho) AMONG TYPES OF INSTITUTIONS WITH REGARD TO FACTORS CONSIDERED IN EVALUATION

TYPES OF INSTITUTIONS	TYPES OF INSTITUTIONS						
	Private Universities	State Universities	State Colleges	Teachers Colleges	Junior Colleges	Technical Colleges	Total
Liberal arts colleges	.84	.61	.91	.86	.94	.85	.91
Private universities	.....	.90	.82	.75	.71	.97	.94
State universities	.....	.....	.63	.59	.46	.87	.81
State colleges	.....	.....	.....	.97	.95	.86	.93
Teachers colleges	.....	.....	.....	.....	.94	.81	.89
Junior colleges	.....	.....	.....	.....	.....	.76	.85
Technical-professional colleges	.....	.....	.....	.....	.....	.....	.97

Before leaving this section, a few other comments seem indicated. In terms of the data collected in this survey, it is apparent that teaching is the most heavily weighted factor in making faculty evaluations. This is appropriate if only because it is teaching which occupies most of the time of faculty members.[10] It is also the thing that most of them like to do. One of the major difficulties encountered in the realm of administration with respect to faculty personnel is the feeling on the part of most faculty members that teaching is paid only lip service, that other factors, especially publication, really pay off in promotions. To put it another way, one group is saying that teaching is the most important factor in evaluation; the other group, the faculty, has reason to doubt that this is so. This has a corrosive effect on morale and is one of the things that eventuates in many faculty members' decisions to leave teaching.

Question II-B asked for descriptions of any differences among departments or colleges that existed with regard to factors considered. Most of the smaller institutions replied that no variations existed, that all faculty members were evaluated on the same basis. In the larger and more complex institutions, however, there were some variations reported. In the colleges of liberal arts, teaching was predominant. Since university faculty members are under considerable pressure to publish, publication tended to be rated higher. In such colleges as medicine and engineering, research is also emphasized. In education, community service is weighted rather heavily. Within even the liberal arts colleges, research is more heavily

[10] Gustad, *op. cit.*

weighted (perhaps in response to the fact that research funds permit greater activity) for the natural and social sciences than for the humanities. By and large, however, there was less variation reported than was expected.

Data Collected for Use in Evaluations

"I can't believe that!" *said Alice. "Can't you?" the Queen said in a pitying tone. "Try again; draw a long breath and shut your eyes." Alice laughed. "There's no use trying," she said: "one* can't *believe impossible things." "I daresay you haven't had much practice," said the Queen. "When I was your age, I always did it for half-an-hour a day. Why, sometimes, I've believed as many as six impossible things before breakfast."*

—Lewis Carroll

It is all very well to list factors considered by various individuals in making evaluations; it is important to know what they say. The heart of the matter, however, may be found in the data, the information which they collect and which serves as the basis for their evaluations. Sections I and II elicited information about the loci of evaluation and the factors considered; section III was designed to provide information about the data collected and employed.

Since classroom teaching was universally cited as the most important single factor in evaluating faculty members, one might therefore assume that a good bit of attention had been paid to sources of information about it. Instead, what was found made it apparent that next to nothing has been done in this area. With but one or two exceptions, the most frequently cited sources of information can be described simply as *hearsay*.

Table 5 contains a summary of the

TABLE 5: SUMMARY OF SOURCES OF DATA GATHERED FOR EVALUATING CLASSROOM TEACHING

SOURCE	TYPES OF INSTITUTIONS, BY PERCENTAGES						
	Liberal Arts Colleges	Private Universities	State Universities	State Colleges	Teachers Colleges	Junior Colleges	Technical–Professional Colleges
Student ratings	25	28	33	18	17	16	21
Student opinions	48	49	40	32	38	40	40
Classroom visits	33	34	30	48	52	52	37
Colleagues' opinion	25	31	30	18	21	20	34
Student examination performance	12	9	13	6	4	4	18
Chairman evaluation	33	49	53	52	73	16	61
Dean evaluation	30	24	20	30	41	0	18
Course syllabi and examinations	7	7	10	10	7	32	5
Student follow-up	10	9	7	12	0	12	13
Course registration	8	4	3	0	0	8	0
Alumni opinion	12	3	3	4	7	0	3
"Informal"	7	9	10	4	14	0	16
Committee evaluation	2	3	7	0	0	0	5
Grade distribution	7	3	7	2	0	20	11
Self-report	3	0	0	4	0	0	0
Student behavior	2	0	0	4	10	0	0
Other	0	0	0	4	7	4	0

analysis made of the reported sources of information about classroom teaching. Six sources appear to be the most heavily utilized: informal student opinion, formal student opinion (student ratings), classroom visitation, colleagues' opinions, and the opinions of chairmen and deans. Student ratings and classroom visitations can be considered to have some objectivity; the others are unsystematic and suspect in the extreme.

The percentages included in Table 5 speak pretty well for themselves. A few comments are needed about the categories themselves. As noted, student opinions are typically obtained in two ways: formally through ratings or informally through comments made to chairmen, deans, and others. Students have a right to their opinions, and they do have them. How valid they are is a still unanswered question. They are probably not capable of making definitive judgments; on the other hand, they are in many instances remarkably acute observers.

The amount of classroom visitation reported was actually surprising in view of the widespread and strongly held feeling that the professor's classroom is his castle. In using classroom visitation, of course, one must ask about the competence of the observer. Years of experience are not in themselves any guarantee that the observer is competent. There is even some reason to believe that the younger faculty member *may* actually be a better teacher, on the average, than his older colleague. Also, there is the question of stage fright, which may afflict the visited teacher. The matter of sampling—how many and which times to visit—must also be dealt with. None of these appears to be an insoluble problem, and classroom visitation would certainly appear to be superior to informal student comments or several of the other kinds of data used.

Three categories dealt basically with others' opinions: colleagues, chairmen, and deans. The validity of these judgments cannot be assessed until and unless one knows the basis for their evaluations. Where classroom visitation is regularly done, any or all may have some validity. Where, as usually happens, these three groups base their opinions on secondary clues, such as knowledge of the field, general intellectual power, compatibility as a colleague, etc., these evaluations are probably of little value. They are certainly no better than the data on which they are based. As one respondent said, "The dean is supposed to know, but he isn't supposed to find out."

The category listed as "informal" was set up because a fairly large number of institutions reported somewhat as follows: this is a small institution, and we all know each other very well. This category was used only when something of this sort was actually *said;* in many cases, the replies suggested that this kind of "evidence" was largely relied upon, even where the respondent said that chairman or dean evaluation was used. In short, this sort of informal evaluation, relying on the accidental and probably biased impressions gained over a period of time, is probably much more involved than the percentages included would suggest. It is typified in the comment from one institution which said: "Somehow or other, we find out who the good teachers are. Or we think so." On the other hand, there was the comment from another college: "We pay lip service to classroom teaching as an important criterion for promotion, but we gather almost no real evidence regarding teaching. Hence, it is not at the present time an effective criterion."

Because teachers like to teach and administrators want them to, and because teachers feel that teaching should be rewarded and administrators claim that it is, the situation revealed in Table 5 is

quite discouraging. It is apparent that little is done to obtain anything that even approaches sound data on the basis of which reasonably good evaluations of classroom teaching can be made. This being so, complaints that classroom teaching is paid only lip service must be to a considerable extent accepted as correct.

One of the major obstacles in the path of doing anything about this is the notion that, because new methods are admittedly inadequate, present methods (for want of a better word) should be retained. A good answer to this has been provided by Seidlin. He said:

> No applied science or technology or art marks time until all that is ever to be known is known; until mythical exact measurement becomes available. As rational human beings, we must put into practice whatever knowledge, whatever measuring instruments are available at any given time.
>
> As an illustration, if you need one: think of the history of progress in medicine. So many theories and practices of even ten years ago have been replaced by more effective theories and practices. Which is not to say that the older theories and practices have not in their day saved lives and combatted disease.[11]

Before leaving this most important aspect of the entire study, it seems appropriate to compare the situation as described with some suggestions put forth by Tyler. He first states the problem as follows:

> The purposes of teaching are to facilitate various kinds of desirable learning on the part of students. Hence, the evaluation of teaching involves appraising the learning of students. But learning is the acquisition by the student of ways of behaving, that is, ways of thinking, feeling, and acting, which he has not previously followed. . .
>
> Of course, not all things students learn in college are desirable so that the evaluation of college teaching is not simply finding out whether the students have learned, but whether they have learned the things which the instructors were trying to teach. . . . This, then, makes the evaluation of teaching a matter of finding out how far the students are acquiring the important ways of thinking, feeling, and acting on which the teachers are focusing their attention.[12]

Following this, Tyler suggests several means of evaluating teaching. First, there is the direct assessment of what students have actually learned. This is no easy task, but measuring achievement can be done fairly well. (If not, teachers' course grades have less meaning than some already suspect!) If this direct evaluation is not enough or is too difficult to get, one may seek to find out the extent to which the teacher creates in his classroom the conditions known to be essential to good learning. A third method is the use of student opinions. Admitting that these are not entirely satisfactory, Tyler nevertheless notes that such opinions tend to correlate fairly well with other measures of teaching effectiveness. A fourth method involves finding out the extent to which faculty members are really working on their teaching, utilizing the most recent and best information about both course content and teaching methods.

The next area of concern had to do with evaluating the supervision of advanced study. This question was apparently somewhat ambiguous since some of the replies obviously referred to graduate work, others to upper-division honors work and independent study. Nevertheless, since the issue had to do with kinds of data collected, the replies are of some use. Table 6 summarizes the results of this analysis. As with

[11] Joseph Seidlin, "Evaluating Teachers: Eventually, Why Not Now?" Paper read at the annual meeting of the New York State Association of Secondary School Principals, 1960.

[12] Ralph W. Tyler, "The Evaluation of Teaching," in *Preparing College Teachers*, ed. A. D. Albright and John E. Barrows (Atlanta, Ga.: Southern Regional Education Board, 1959).

TABLE 6: DATA GATHERED FOR EVALUATING THE SUPERVISION OF ADVANCED STUDY

SOURCE	TYPES OF INSTITUTIONS, BY PERCENTAGES						
	Liberal Arts Colleges	Private Universities	State Universities	State Colleges	Teachers Colleges	Junior Colleges	Technical–Professional Colleges
Number of theses	0	6	17	0	7	0	3
Number of students	0	4	23	2	7	0	3
Colleagues' opinion	12	24	20	6	0	0	21
Off-campus colleague opinion	0	2	3	0	0	0	0
Student quality	7	13	23	10	17	0	24
Chairman evaluation	8	27	17	10	10	0	26
Dean evaluation	3	16	27	14	21	0	26
Course registration	0	3	0	0	0	0	0
Assignment to committees	0	3	10	2	0	0	5
Student opinion	8	3	20	12	7	0	8
Committee evaluation	3	0	0	6	0	0	0

teaching, it is apparent that the opinions of colleagues, chairmen, and deans are the most frequently employed kinds of "data" in evaluating this activity. The question is not whether these individuals have a right to such opinions; it is, rather, the basis upon which they form them. Exactly the same problems must be solved in this area as in teaching: to say that others' opinions are the data employed is perfectly acceptable as long as the bases on which these opinions are formed justify them.

It is frequently said that the reason research is rewarded when teaching is not, is that research is easier to evaluate. This may or may not be true. As one who has been involved rather extensively both in the production and evaluation of research, the writer is inclined to feel that the ease with which research is evaluated is more apparent than real. The responses to the question dealing with research evaluation suggest quite clearly that research is not, in fact, actually evaluated; it is *counted.*

TABLE 7: DATA GATHERED FOR EVALUATING RESEARCH

SOURCE	TYPES OF INSTITUTIONS, BY PERCENTAGES						
	Liberal Arts Colleges	Private Universities	State Universities	State Colleges	Teachers Colleges	Junior Colleges	Technical–Professional Colleges
Faculty résumé	35	38	50	40	45	20	45
Faculty committees	2	24	13	2	10	0	3
National reputation	3	19	23	4	4	0	8
Journal quality	2	3	13	0	0	0	0
Contracts and grants	8	9	23	2	10	0	8
Chairman evaluation	15	24	37	20	17	4	16
Dean evaluation	20	15	30	16	14	0	18
Research proposals	5	7	7	4	14	0	11
Research committees	5	7	3	6	4	0	13
On-campus reputation	15	15	20	12	7	0	21
Other	3	3	0	2	10	0	0

TABLE 8: DATA GATHERED FOR EVALUATING PUBLICATION

SOURCE	TYPES OF INSTITUTIONS, BY PERCENTAGES						
	Liberal Arts Colleges	Private Universities	State Universities	State Colleges	Teachers Colleges	Junior Colleges	Technical–Professional Colleges
Faculty résumé	28	37	50	28	48	28	42
Committee evaluation	2	22	17	6	10	0	5
National reputation	3	15	17	2	4	0	3
On-campus reputation	10	13	17	2	7	0	5
Journal quality	8	12	10	8	0	0	8
Chairman evaluation	10	18	30	14	7	0	18
Dean evaluation	22	13	30	14	10	0	18
Reprints	32	21	27	34	24	8	24
Other	2	0	3	6	7	0	0

Table 7 contains the results of the analysis of the responses having to do with the evaluation of research. As in the first two areas, the opinions of colleagues, chairmen, and deans are apparently the predominant bases for such evaluations. More frequently mentioned than any of these three, however, was the faculty résumé. A less polite way of describing this would be "yardage" or the publications list. In the category "other," the most frequently mentioned device consisted in counting citations to a professor's work in other publications. Possible.

The responses to the question having to do with the evaluation of publication were, not surprisingly, quite similar to those given to the previous question. Table 8 summarizes the analysis of responses to this item. As with research, faculty yardage—the résumé or publications list and the reprints sown in strategic places—is the principal basis for evaluation. It would appear that colleagues, chairmen, and deans are the ones who evaluate this material. *Some* chairmen, *some* colleagues, and a *few* deans are probably capable of doing so. It would be interesting to try to discover, also, how decisions are made about the quality of the journals, academic pecking orders being what they are.

Public service was another area inves-

TABLE 9: DATA COLLECTED FOR EVALUATING PUBLIC SERVICE

SOURCE	TYPES OF INSTITUTIONS, BY PERCENTAGES						
	Liberal Arts Colleges	Private Universities	State Universities	State Colleges	Teachers Colleges	Junior Colleges	Technical–Professional Colleges
Faculty résumé	30	37	67	42	48	36	34
Faculty committee	0	4	3	2	7	0	3
Chairman evaluation	10	21	20	4	17	4	13
Dean evaluation	10	10	23	6	10	0	11
Public reaction	5	9	3	10	4	0	3
Public relations office	18	6	13	18	7	24	11
Nature of the organization	0	2	3	0	4	0	3
General knowledge	18	9	10	12	7	12	0
Other	0	6	3	6	7	0	0

tigated. Table 9 summarizes responses to the question about what kinds of data are collected for evaluating this. Again, the ubiquitous faculty résumé is high on the list; that is, the faculty members tell someone, usually the chairman or dean, what they have been doing. This presumably is about as informative as a publications list. From it, one knows that the faculty member is not entirely cloistered and that someone is presumably interested enough in him to invite (or permit) him to venture into the market place. The category "general knowledge" was used to provide for statements like those prompting the use of the category "informal" earlier (see Table 5). That is, in a fair number of cases, respondents alleged that, because the faculty was comparatively small in number, what professors did in public service became generally known. The validity of this assumption needs substantiation.

Finally, an open-ended question was asked about other kinds of data collected for evaluation. No activities or sources of data showed up with any special consistency or frequency. Included among the more frequent responses were the following: student counseling and advising; committee work; activity in professional societies; evidences of extra work or general diligence.

In general, to call what is typically collected or adduced to support evaluative decisions "evidence" is to stretch the meaning of that honored word beyond reason. Certainly, if anyone presumed to support a thesis in the published literature with evidence of this quality, he would be ruled off the course forthwith.

A further quotation from Seidlin seems the best way to close this section:

> Is a teacher's job so intangible as to defy critical analysis? Is it really impossible to differentiate between inspired teaching and deadly dull teaching; between uniquely human teaching and machine teaching; between effective teaching and tainted teaching?
>
> Many, many years ago an analogous situation existed in the field of physics. As we all know, the force affecting a body is the resultant of a great number of forces—too many to count. Physicists tackled the "insoluble" problem by what has come to be known as *isolating the system*. That meant (means) that a small number of the more dominant forces is assumed to comprise the total number of forces and the resultant of these is computed. . . . As for *exact* measurements, there aren't any, even in physics. . . . But the physicist or the chemist who refuses to use available measuring devices because they do not yield exact measurements, if he exists at all, is probably in an insane asylum.[18]

Miscellany

> *"The horror of that moment," the King went on, "I shall never,* never *forget!" "You will, though," the Queen said, "if you don't make a memorandum of it."*
>
> —Lewis Carroll

Another question that remains has to do with the extent to which the present situation is regarded as a serious problem. Institutions were asked whether they felt satisfied with their present evaluation policies and practices and, if not, what they suggested or wished they had.

Table 10 summarizes the responses to the question about satisfaction. Roughly speaking, the group was divided: about half are satisfied; half, dissatisfied. Such divisions always make for difficulties in interpretation. On the one hand, it is

[18] Seidlin, *op. cit.*

TABLE 10: EXTENT OF SATISFACTION WITH PRESENT EVALUATION METHODS

REACTION	TYPES OF INSTITUTIONS, BY PERCENTAGES						
	Liberal Arts Colleges	Private Universities	State Universities	State Colleges	Teachers Colleges	Junior Colleges	Technical–Professional Colleges
Satisfied	43	54	43	34	41	32	45
Uncertain	13	9	10	8	10	4	8
Dissatisfied	37	32	40	50	48	44	42
No reply	7	5	7	8	1	20	5

possible to say that there is certainly no clear mandate here. (The Republicans have been interpreting the results of the 1960 election in this manner.) On the other hand, one could say that, if half of a group is dissatisfied with a situation, something *ought* to be done.

In the space left for suggestions, only two or three were made with any frequency, one predominating over the others. Most often, it was said that what is needed is some method for evaluating classroom teaching. Secondly, there was a wish for greater objectivity in *all* kinds of evaluations. A considerably smaller group wished for some means to evaluate the quality of research other than yardage. At the other extreme came a rather plaintive comment saying: "Some of these days it may be, not a question of how much merit your faculty people have but whether you have them with or without merit." One might well ask whether, in the present seller's market, attempts to examine the horse's teeth have any chance at all of success.

A question was also asked about whether institutions had committees at work on the problem. Table 11 summarizes the situation. It should be added that a number of institutions *had* such committees in the past. However, in analyzing replies, institutions were placed in the "yes" category only if such committees were now active or had been within the very recent past. It is apparent that only the teachers colleges and the state universities have such committees in even half of the cases. For the rest, they are things of the past, future, or never were.

TABLE 11: AVAILABILITY OF COMMITTEES CONCERNED WITH FACULTY EVALUATION

REPLY	TYPES OF INSTITUTIONS, BY PERCENTAGES						
	Liberal Arts Colleges	Private Universities	State Universities	State Colleges	Teachers Colleges	Junior Colleges	Technical–Professional Colleges
Yes	23	32	53	32	48	4	8
No	60	60	37	60	41	72	76
No reply	17	8	10	8	11	24	16

Summary and Conclusions

You can find all the reasons for not doing a thing, or you can find some reasons for doing it. If the reasons for doing it are good, then you have got to have the courage to try it, and work out the problems as they come up.

—Carroll M. Shanks

It was not assumed, when this study was planned, that the situation with respect to faculty evaluation would be found to be good. It was no great surprise, therefore, to find it as it was. What *was* somewhat surprising was the extent and depth of the chaos. The majority of institutions studied said that they placed principal weight on teaching ability, but no even approximately effective method of evaluating this seems to be in use. Scholarship is evaluated by bulk rather than by quality. Other factors are evaluated on a hit-or-miss basis. To say that higher education needs to get its own house in order is something of an understatement.

Neither was it assumed that this study would uncover a panacea or a program good for all times and all places that could be recommended to interested institutions. Nor was there any thought that from this study would come a formula, a neat equation that would reduce uncertainty and increase rationality in the system.

What *was* assumed and hoped for was that this survey would identify the situation as it exists. Since policies and practices of evaluation are in fact the means whereby institutions reinforce certain kinds of activities (and, thereby, positively or negatively select faculty members), an analysis of these, it was felt, would lead to a better understanding of the operating philosophies which must be seen clearly before any remedial steps can be undertaken. Absolute precision and objectivity in faculty evaluation are almost certainly unattainable. *Greater* precision and objectivity, however, are not. It is axiomatic that, before one sets out to measure something, he must know what it is he wishes to measure. And why.

There is unquestionably a great deal of feeling that teaching is not readily susceptible to precise evaluation. To some extent, the proponents of this point of view are correct. The question is, however, whether or not some improvement can be made. Faculty members are about as thoroughly divided on this as are administrators. Seidlin's reference to the analogy from physics is compelling even if not, perhaps to some, conclusive.

Deeply involved is an attitude which holds that, despite the apparent chaos, present procedures are really effective and appropriate to the situation. It is an attitude well expressed by one respondent who said that there is ". . . no substitute for a mature, wise, and modest [*sic!*] judgment."

This is probably true to a considerable extent. The question that remains, however, is: How or on what bases are these judgments formed? Also, one must ask how valid they are. An analogous situation is at issue in the field of psychotherapy. Here, one group insists that greater objectivity is required; another group feels that the clinical relationship is such that objectivity in evaluation is more of a danger than a help. Meehl has considered the issues on both sides and concluded as follows (the reader need make only a simple translation from the therapeutic to the teaching situation):

> Is any clinician infallible? No one claims to be Hence, sometimes he is wrong. If he is sometimes wrong, why should we pay

any attention to him? There is only one possible reply to this "silly" question. It is simply that he *tends* (read: "is likely") to be right. "Tending" to be right means just one thing—"being right in the long run." Can we take the clinician's word for this? Certainly not. As psychologists, we do not trust our memories, and we have no recourse except to record our predictions at the time, allow them to accumulate, and ultimately tally them up. We do not do this because we have a scientific obsession, but because we know that there is a difference between veridical knowledge and purported knowledge, between knowledge that brings its credentials with it and that which does not. After we tally our predictions, the question of success must be decided upon. If we remember that we are psychologists, this must be done, either by some objective criterion or by some disinterested judge who is not aware of our predictions. . . . I am led by this reasoning to the conclusion . . . that the introduction of some special "clinical utility" as a surrogate for validation is inadmissible. If the clinical utility is really established and not merely proclaimed, it will have been established by procedures which have all the earmarks of an acceptable validation study. If not, it is a weasel phrase and we ought not to get by with it.[14]

[14] Paul E. Meehl, *Clinical versus Statistical Prediction* (Minneapolis: University of Minnesota Press, 1954).

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Project "Reward"

A Program of Institutional Research To Increase Instructional Productivity

PHILIP H. TYRRELL

A ONE-DIMENSIONAL treatment of Rensselaer Polytechnic Institute's Project "Reward"—what it is, what it does—would not convey a really meaningful picture to anyone because there would be no frame of reference in which to place it. The frame is necessary in order for anyone to understand the several dimensions of its activity.

Therefore, I shall explain (1) what the project is (very briefly), (2) the problem it seeks to alleviate, and an analysis of the factors involved, (3) the concepts in terms of which it operates, (4) what it does, and how and through whom it gets things done, (5) what its results have been thus far, and (6) what the future needs from it and similar agencies. I hope this procedure will provide the "Why," as well as the "What," "How," and "Who" of Project "Reward's" existence. Since it is now in only the third of what may be an indefinite number of phases, this is a progress report, not a final one.

Project "Reward" is both an idea and an agency. As an idea, it is the over-all progressive attitude at Rensselaer toward experimentation to find more effective and efficient ways of teaching. This involves research aimed at the continuing improvement in quality of what we believe to be already good instructional programs, at a cost less than that to be expected for such improvement. As an agency, the project provides services to faculty and administration, and coordinates, when needed, the separate instructional research efforts of the faculty.

The problem

The problem which the project seeks to alleviate is one that everybody knows well but which no one, until recent years, has done anything about; namely, how to provide, in the face of a vastly increasing demand for education beyond the secondary level, better instruction to more students at less cost.

We all know the urgency of this problem. One prediction of the total enrollment of full-time students in higher education in 1970 is 4,504,500, as compared with 2,551,723 in 1959.[1] We also know how fast new information is developing in every discipline. The problem, then, is easily stated; however, its analysis and solution are more difficult.

If "a problem is a situation which lacks a ready-made answer based on past experience and demands that definite action be taken to secure a desired outcome," [2] what is a reasonable attack on the problem at hand?

Our attack at Rensselaer, begun in 1956, has been, first, to gain some experience pertinent to the problem, and, second, to implement a plan of action timed in accordance with our growing experience and our resources, all with the inspiration and vision of our leader-

[1] *Higher Education and National Affairs*, Bulletin issued by American Council on Education, March 31, 1960, p. 9.

[2] *Air Science* 3 (Maxwell Air Force Base, Montgomery, Ala.: Air University), II, 2. (This book has been used as a text for a course entitled "Problem-Solving Techniques" at Air University.)

ship—in this case, our trustees, president, and provost. To this end, we have developed a program of activities designed to serve the instructional programs of Rensselaer as a whole, with special emphasis upon assisting those individual faculty members who wish to explore new instructional methods and materials. Faculty participation in this program is, of course, absolutely voluntary. No dean or provost at Rensselaer has ever forced an instructor to change his teaching methods.

Concepts relevant to the problem

From our progress thus far in attacking the problem, we can say that we believe the key element in providing better instruction to more students at less cost is *increased instructional productivity*. If we adapt Peter F. Drucker's definition of economic productivity [3] to the field with which we are concerned, then *instructional* productivity can be described as the balance between all known factors of instruction that will give the greatest output of a desired quality for a given effort (or cost). At Rensselaer, we believe that this balance can be best determined by objective cost analysis, plus our most informed assumptions about, and our most reliable attempts to measure, quality.

Now, lest I generate some misconceptions about the area in which Project "Reward" operates, I wish to define some terms that we ordinarily use very loosely, namely, training, instruction, and education. Although many definitions of these concepts are available, I prefer the following:

1. *Training.* "Training is the management of personnel improvement." [4] "Personnel" may refer to employees or students, depending on the organization. Training aims at such objectives as proficiency in skills and the development of right attitudes for specific environments. The concept of training is too limited to be the area of emphasis of Project "Reward," and will not be considered further in our discussion.

2. *Instruction.* Instruction is a creative process of developing in others "knowledge, information, attitudes, skills, understandings, appreciations, and behaviors." [5] In addition, "instruction means a pre-planned, deliberate selection and arrangement of situations so as to stimulate learner interaction. The result of this interaction is experience, which is intended to help the individual change his patterns of response in a predetermined, prescribed direction considered desirable by those responsible for the instruction." [6] We may summarize this definition by saying that instruction is a process of "imparting knowledge, information, or skill to the student, especially by systematic methods." [7] This is the area of emphasis to which Project "Reward" has confined its main effort.

3. *Education.* Definition of this term is important to a distinction we will need to make, in a moment, between education and instruction. Of the many definitions of education which exist, the following three are representative:

"All education is a search for talent, a development of humans to their full potential, and a means by which people can rise from an inherited caste in accordance with their abilities." This is a philosophical definition, stated by Harold

[3] Drucker, *The Practice of Management* (New York: Harper & Bros., 1954), p. 41.

[4] Charles Bish, "Bridging the Gap between Theory and Practice," Paper presented to the Institutes for Supervisors of Training of the General Electric Company, 1954.

[5] Lindley J. Stiles, "Instruction," in *Encyclopedia of Educational Research* (3rd ed.; New York: Macmillan Co., 1960), pp. 710–14.

[6] Charles F. Hoban and Edward B. van Ormer, *Instructional Film Research, 1918–1950*, Technical Report No. SDC 269-7-19 (Port Washington, L.I., N.Y.: Special Devices Center, 1951), chap. I, p. 3.

[7] Stiles, "Instruction," *loc. cit.*

M. Groves,[8] and based on the attitude reflected in the report of the Committee for the White House Conference on Education.

"Education, in a broad sense, refers to all those experiences, both planned and incidental, which the individual encounters and which contribute, in a large or small degree, to the modification and growth of his knowledge, abilities, attitudes, and other aspects of self-development. These experiences, interacting with his hereditary and natural potentialities, result in his being the kind of person he is now."[9] Formal education is "directing or guiding an individual's learning so that he will develop socially useful forms of behavior."[10] Hoban defines learning as "a process of individual discovery."[11]

Another philosophical definition is by Thomas Henry Huxley, who, in 1868, wrote that "education is the instruction of the intellect in the laws of Nature, under which name I include not merely things and their forces, but men and their ways; and the fashioning of the affections and of the will into an earnest and loving desire to move in harmony with those laws."[12]

From these definitions we can see that "education" is a broad generic term which includes the specific process of instruction. Rensselaer, of course, aims at contributing to education in the broad sense; but, within Rensselaer, Project "Reward" aims specifically at contributing to the creative process of instruction.

[8] Groves, "National Economy and Education," in *Encyclopedia of Educational Research* (3rd ed.; New York: Macmillan Co., 1960), pp. 917–22.

[9] Hoban and Van Ormer, *Instructional Film Research, 1918–1950*, chap. I, p. 3.

[10] *Ibid.*, chap. I, p. 3.

[11] Charles F. Hoban, "Research and Reality," *Audio-Visual Communication Review*, Winter 1956, p. 15.

[12] Huxley, "A Liberal Education, and Where To Find It," *Collected Essays*, Vol. III: *Science and Education* (New York: D. Appleton, 1914).

The distinction between education and instruction is very important when we use the concept of instructional productivity to attack the problem of providing better instruction to more students at less cost. The implications of this distinction have been stated by the provost of Rensselaer, Dr. Clayton O. Dohrenwend:

> Experience shows that the complete educational process is difficult, slow, and capable of only limited acceleration. This makes it problematical that the educational process can be significantly speeded up. Here we are dealing with the human mind and its ability to learn, retain, and correlate information. The educational process, although it is properly strengthened by the school, is life long. However, instruction, one of the main mechanisms through which education is achieved, is not subjected to the same limitations. Instruction *can* be speeded up and can be accomplished on a mass production basis.[13]

This belief that the instructional process can be altered for the better—timewise, costwise, and qualitywise—is the premise behind the efforts of Project "Reward." The implementation of planned action, based on this belief, is the essence of increased instructional productivity. Note that we are altering only one element in the complete lifelong educational process, which contains numerous elements, many having as much importance as instruction.

Now that we have stated the problem and examined the concepts which constitute the project's theoretical orientation, let us inspect the specific program and activities of the project.

The Project "Reward" program

In addition to what has already been said, Project "Reward" can also be de-

[13] Dohrenwend, "An Introduction to the Problem," Unpublished proceedings of Seminar on Reduction of Costs of College Instruction, held at Rensselaer Polytechnic Institute, February 1959.

scribed as an institutional research program. What is institutional research in a college?

For our present purposes, I should like to define an institution as a formal organization, which Ordway Tead describes as "a combination of the necessary human beings, equipment, facilities and appurtenances, materials and tools, assembled in some systematic and effective coordination, in order to accomplish some desired and defined objective." [14] Although "desired and defined" objectives of institutes and colleges evolve and change and thereby are a perennial topic of long-range planning, they always include the objective of effective instruction.

For the record, let us also define "research"—in this case, "applied research." It is "a method of studying problems whose solutions are to be derived partly or wholly from facts. The facts dealt with in research may be statements of opinion, historical facts, those contained in records or reports, the results of tests, answers to questionnaires, or experimental data of any sort." [15]

Therefore, summarizing our interpretations of instruction, institutions, and research—all with respect to Project "Reward"—we may say that the project, besides being an idea, is an agency that bases its operations on the methodical study of problems that are concerned with the process of imparting knowledge, information, or skills to students within a formal organization which has the effectiveness of this process as one of its continuing objectives.

Now, let us look at specific activities that are concerned with our institutional research.

[14] Tead, *The Art of Administration* (New York: McGraw-Hill Book Co., 1951), p. 10.

[15] Earl Bennett South, *A Dictionary of Terms Used in Measurements and Guidance* (New York: Psychological Corporation, 1939), p. 69.

Project "Reward" activities

The first activity is the processing of instructional cost-analysis data gathered by means of a Faculty Activities Report, data which finally end up in tabular form —more than thirty tables for each year's analysis. Faculty members submit these reports each semester, and we now have data covering the last five years. One product of each year's analysis is the unit cost of instruction, in three forms: per student credit hour; student contact hour; and instructor contact hour, by departments. A second product is percentages of classroom utilization. The processed data are interpreted by academic administrative officers to ascertain trends and to identify critical factors in the operation of separate programs. The annual analyses have also become a means of measuring, in terms of cost, the results of instructional experimentation, for example, in class size and in the use of closed-circuit television. Administrators find the data in these analyses vital to the decision-making process.

The second area of activity in which we engage—and it is by far the most glamorous—is the development of multimedia instructional methods and materials. This activity is based on the premise that, with consultation and production services provided, the teacher can increase his own capabilities and that greater student learning will result. You may recall Henry Adams' statement that "a teacher affects eternity; he can never tell where his influence stops." [16] We want every teacher's influence to become as effective as possible, not only through the growing wisdom of experience but also through better methods and materials for communicating what he knows. Increasing staff capabilities and effectiveness is an aspect of the quality factor in instructional productivity.

During the last four years, we have

[16] *The Education of Henry Adams.*

built a multimedia production program, as follows:

1. *Instructional films.* More than thirty years of film research indicates that teaching films are effective in communicating facts, demonstrating procedures, and visualizing concepts. Yet very few good films exist on a level above the secondary school. We have acquired film production personnel and professional equipment and produced, thus far, ten films in the following fields: Chemistry, civil engineering, engineering drawing, language and literature, mechanical engineering, mechanics, and physics. During the next two years, we expect to double our film production annually. All of our films are produced, of course, in cooperation with faculty.

2. *Closed-circuit television.* During 1957–58, we helped the staff of our Department of Mechanics apply CC-TV to one of their courses, Strength of Materials Laboratory. This meant the development of numerous scripts; selection, acquisition, and installation of equipment; and the careful programming of subject matter to utilize the advantages of the TV close-up shot. We conducted a controlled experiment on this type of teaching versus the conventional and found it, in several ways, to be superior. Since then, we have used this medium for teaching the course. We also have CC-TV installations, for purposes of magnification, in our Departments of Metallurgical Engineering and Physics.

3. *Other photographic aids and artwork.* In addition to studio and location still photography, resulting in hundreds of slides and prints each year, we are currently producing—through a method of combining artwork and either photography or the diazo process—many large transparencies for use with the overhead projector. This type of projection often eliminates the chalkboard.

By developing these methods and materials, teachers are able vastly to increase their capabilities and, thereby, they promote for each student that "process of individual discovery" by helping him to see and understand, through many media, the subject he is studying. If "all experience is an arch, to build upon," [17] as Henry Adams also said, then the greater number of truly meaningful experiences—through the senses and the mind—that we can give the student, the better he can build his future. The effective sharing of such experiences between teacher and student builds an immediate teacher-scholar to student-scholar relationship which is not greatly different from that which we are told Mark Hopkins enjoyed on his famous log, although we may mediate these experiences by film, TV, mechanisms for independent study, or, in the future, by devices not yet invented. Behind the programming of any device, there is the teacher.

The third area of Project "Reward" activity is consultation. Faculty consult with us on instructional materials, equipment, classroom facilities, and the design of experimental projects. All major, and many minor, production efforts are preceded by lengthy consultation.

In connection with consultation and production, I should like to interpose some comments on how Project "Reward" helps to initiate experimental efforts on the campus. For example, we "primed the pump" when we assisted our Department of Mechanics with their CC-TV teaching installation. This application of TV led this department to design, and attract funds for, the renovation of a traditional lecture hall into a modern pilot auditorium-studio, of which the outstanding feature is a "communication wall" designed especially for multimedia presentations. This facility enables an instructor to present, sequentially or simultaneously, four rear-projected im-

[17] *Ibid.*

ages (motion picture, TV, and 2″x 2″ and 3¼″x 4″ slides). Concurrently, we interested our School of Architecture in undertaking, with outside support, an investigation into the design of auditorium-studio facilities for engineering education. So now we have an experimental classroom in operation and a design studies program near conclusion (as of January 1961), both of which are preparatory to the building of a large auditorium-studio or its equivalent in Rensselaer's new Science Center.

The fourth area of project activity is the dissemination of information. Our newsletter, *Toward More Effective Teaching at Rensselaer,* published each semester, has elicited a generous response from our faculty, whom it seeks to inform about one another's experimental work; it has also attracted interest from diverse parts of the educational community at large. (You will find some of its articles listed in *Reporter* and in other publications of the U.S. Office of Education.) In addition, we collect reports on experimental work at other schools and circulate them among our faculty; we want to learn from others as well as to share freely what we have to offer.

Greatly summarized, these are the avenues we have found to be most promising for us in achieving improved instruction at reduced cost.

Sample results

Project "Reward" has moved through Phase I (the preliminary investigation of what needed to be done), and through Phase II (exploratory work and preliminary evaluation of selected experimental efforts). It is now in Phase III (the development of programmed experimentation having the acknowledged status of institutional research). Details of later phases cannot be outlined at this time. However, we do feel certain that, with the vast technical developments which surely lie ahead of us and with the nature of teachers and teaching being what each is, we will never arrive at standardization of the instructional process nor of those personalized activities which provide service to our faculty. Instruction will continue to be creative and, I hope, intimate, though the intimacy may be of a different kind than we now know.

The following sample results are based primarily on Phase II—preliminary evaluation of selected experimental efforts:

1. Since 1957 we have held the line on the unit cost of instruction, although faculty salaries have been raised and our students are benefiting from an improved educational experience. Unit costs have remained fairly constant.

2. The efficiency of our classroom utilization has increased. We carry the same instructional load we did several years ago, but now with fewer classrooms than previously—the extra rooms being converted for other uses (laboratories and offices). This increase in efficiency is due to improved central scheduling procedures and to the larger classes we now have.

3. In a controlled experiment in our Department of Mechanics—an experiment whose results we believe to be representative also of several other departments—we found that class size is not as important to the effectiveness of instruction as is the teaching method used. Three teaching methods were compared in this experiment: the small section method, the lecture-discussion method, and an experimental approach used with large classes.

According to Professor R. H. Trathen, who conducted the experiment, the good student did well regardless of teaching method or the teacher. The average student, on the other hand, benefited by being assigned to an experimental sec-

tion of 90 to 100 students.[18] Results of this experiment led the department to adopt the large-section system for teaching all its courses, with important implications. For example, in the fall of 1958, a typical semester, 100 weekly instructor contact hours would have been required to handle the enrollment in two selected courses if students had been assigned to small sections. By using large sections, only 23 instructor contact hours were required. Standards of student achievement were not sacrificed.

In this department, also, a controlled experiment on teaching a laboratory course by means of CC-TV was conducted during the spring of 1958. Quantitatively measured, the achievement of TV students equaled that of those taught conventionally. Important by-products of this investigation were: communication of information by TV was more uniform from section to section than that provided by instructors in conventional laboratory classes; and, from the student's point of view, the TV method was slightly more efficient than the conventional method in the utilization of laboratory time.[19]

4. Since our films have been used thus far only as supplementary aids to instruction, we have had little opportunity to measure their effect quantitatively, mainly because we have not yet produced an entire series on one subject. Soon we will be able to do this, in what will be a controlled experiment in teaching Graphics II, under a grant from the U.S. Office of Education. However, among our finished films are two in what will be a series of ten on advanced surveying. Professor G. R. Shaw, who teaches this subject, describes the results of using the first film: *all* students viewing the film reported that it helped them to understand the procedures shown, and 34 percent of the students reported that they had been helped to a high degree by the film.[20] Other of our films, even as aids, have saved professors' time by replacing conventional laboratory demonstrations which usually require lengthy set-up procedures.

5. In the area of independent study, a sample result of experimentation involved our Department of Chemistry. With the objective of increasing the student's responsibility for his own education, the entire subject matter of a course in quantitative analysis was given to students in eight lectures and two film presentations during the first five weeks of the course. The laboratory part of the course was not changed. Study sessions and quizzes were scheduled, but attendance was voluntary. Professor L. G. Bassett, who taught the course, states that student achievement did not suffer, fewer contact hours of a senior professor were required, and student reaction was good.[21]

These are, of course, sample results, but representative of Rensselaer's instructional experimentation. They are all related either to the cost or the quality, or both, of instruction, and a balance of these factors is what we mean by instructional productivity.

Synthesis for the future

When we speak of the future, it is difficult to limit one's remarks to the instructional process. But I shall try to do so,

[18] Trathen, "Two Years of Experimental Work on Various Teaching Methods and Class Sizes," *Journal of Engineering Education*, February 1960, p. 385.

[19] Joseph F. Throop, Lewis T. Assini, and George W. Boguslavsky, *The Effectiveness of Laboratory Instruction in Strength of Materials by Closed-Circuit Television* (Troy, N.Y.: Rensselaer Polytechnic Institute, 1958).

[20] Shaw, "Instructional Films in Surveying Education," *Surveying and Mapping*, June 1960, p. 192.

[21] Bassett, "Increasing the Student's Responsibility for His Own Education," in *Case Book: Education Beyond the High School* (Washington: Division of Higher Education, U.S. Office of Education, June 1958), Vol. I, Case No. 36.

because as Alfred North Whitehead once said, "in education, as elsewhere, the broad primrose path leads to a nasty place!" [22]

In looking forward, we must start where we are now. We must find more solutions to our present and continuing problem: how to provide better instruction to more students at less cost. This problem will probably always be with us, but its critical factors will change and our solutions must keep pace with the changing aspects of the problem. And there will be many other problems. We must learn to recognize them. We must develop procedures for asking the right questions. Undoubtedly, this is a task for institutional research programs.

Just to raise some questions, I have formulated, at the risk of vast oversimplification, a few of the many elements in an instructional environment. Combinations of various elements, or components, may be called "systems," in that the components and their attributes exhibit relationships with one another. It is helpful, also, to think of these systems as "open," because they exchange energy or information with their environment.[23]

What one includes in a system depends upon the specific problem to be investigated. For example, in exploring an experimental program of independent study, some of the interacting elements of one system might be a professor, selected students, a structured area of knowledge, and specialized learning aids, each having identifiable attributes. Not only would this system be maintained and developed (in this case, for a specified length of time), but the combination of components, plus each one's relationships with each other one, all acting dynamically, would influence the instructional environment as a whole and other open systems within this environment. Obviously, this kind of interaction promotes feedback and reorganization. We may, of course, have subsystems and larger environments.

It is of interest to observe, in connection with instructional productivity, that there normally exists within an instructional environment a control mechanism, in itself an open system, for evaluating the quality and cost of instruction. Similarly, in the larger educational environment, a comparable control mechanism makes possible evaluation of quality and cost from a more comprehensive viewpoint.

Using the open-systems approach as a procedure for identifying and analyzing problems anticipated in the future, what are some of the right questions for us to ask now? Here are a few suggestions:

1. As we introduce new, and delete old, elements in the instructional environment, what changing roles will the teacher play?

2. Concurrently with any change, how can we learn better to evaluate what we do? How can we learn better to make assumptions about the future and learn better to choose a future course of action? How can we improve the decision-making process in education?

3. In accomplishing the above, how can we guarantee the freedom of the teacher? If "the teacher affects eternity," he must not lose, but gain, in influence as an intellectual leader.

4. Lastly, but basic to every consideration, what do we want to achieve—tomorrow, in 1970 or 1980, in 2000—by this process of education, of which instruction is one part? Objectives surely change, as human conditions change. How do we formulate the right objectives?

[22] Whitehead, *The Aims of Education and Other Essays* (New York: Macmillan Co., 1929), p. 7.

[23] A. D. Hall and R. E. Fagen, "Definition of System," *Yearbook of the Society for General Systems Research* (Ann Arbor, Mich.: The Society), I, 23.

This may sound too philosophical. But we have the talent to answer the minor questions: Shall we introduce TV or not? How do you construct a better examination? How do you keep a curriculum up to date? How do you build appropriate facilities? The real challenge of the future is none of these. But the challenge does involve the complex interaction of students, teachers, and the community. It also involves the expansion of knowledge and the greatly human conditions of wealth, poverty, and physical and spiritual sickness and health.

These observations have already led us far beyond instruction, and, I am afraid, have started us down the "broad primrose path." It is, therefore, time to stop. The future is an open question.

However, we all belong to some part of the educational environment. Each of us has ever-maturing goals and standards for ourselves as members of the teaching profession. Programs of institutional research, such as Project "Reward," can often help us to discover and to share new dimensions in the teaching-learning process, thereby assisting education in accomplishing whatever present and future tasks it elects to undertake in order to serve effectively the needs of man.

At the present time, some nineteen agencies are running international educational programs. These are only loosely coordinated in the Department of State. They concentrate excessively on the exchange of persons rather than on the building of institutions within the countries. And they are not related to the very substantial programs being conducted by American universities and private foundations.

Given the inherently long-run nature of the education problem in the underdeveloped areas and the crucial importance of building educational institutions on the spot in the developing countries, I believe it would be wise to have international educational development on a semi-independent basis. We might consider creating an equivalent of the National Science Foundation for this purpose. Its task would be not merely to coordinate more effectively than at present the scattered government programs, not merely to relate government and nongovernment programs, but also to take the responsibility for creating new educational institutions for the training of civil servants, agricultural extension workers, industrial managers, and the like. Such new institutions are desperately needed in Africa, but they might well have their place elsewhere as well. At the head of this new foundation should be a man with high and international standing in the intellectual world, capable of commandeering first-rate men from our universities, capable of dealing on at least equal terms with tough Washington bureaucrats, and capable of negotiating with sensitive foreign governments.

The objective should be to create stable long-run educational development programs, relatively impervious to the short-run vicissitudes of international politics, which would bring to bear the enormous untapped reserve in American educational life of willingness and enthusiasm to help the underdeveloped areas—a willingness which extends from our undergraduates to the most senior members of American faculties.—"The American Agenda in the Underdeveloped Areas," by W. W. Rostow, in *The Role of American Higher Education in Relation to Developing Areas*, edited by Alison Griffith, published by the American Council on Education, 1961.

Sponsored Research and Scholarship

W. GORDON WHALEY

It is commonly believed that the issue of sponsored research and scholarship, which has come to be both a saving grace and an admitted evil, is largely a problem that arose because of the great demands of government for facts during World War II. Although one can undoubtedly go further back, one might consider Archimedes, born in 287 B.C. My friend, Professor Alfred Schild, has referred to him as "the first government-sponsored scientist," partly because Archimedes is credited with the solution of a problem handed him by Hieron II, king of Syracuse. Hieron wanted to determine whether a new gold crown were not indeed part silver. Legend has it that the idea for solving the problem (measuring the overflow of water after immersing equal weights of gold and silver) occurred to Archimedes while he was in the public bath and that he ran home without bothering to put on his clothes.

Whether the legend is true or not, we may assume that Archimedes' enthusiasm lay in the discovery of a principle rather than in his practical assistance to the king. Responsible for a multitude of practical inventions, Archimedes looked upon his advancement of ideas as more important than his contributions to the government or what we might perhaps call industry. The thought may be summed up by the fact that he had inscribed on his tomb a sphere inside a cylinder, to denote his thinking out and then proving by experiment the relation between the surface and the volume of a sphere.

But, lest I give you the idea that government-sponsored scholarship had an importance from the beginning in science alone, I should like to remind you that Leonardo da Vinci removed himself from Rome and Florence to Milan because he had concluded that Lodovico Sforza's support of his ideas and of his work might be a better source. In Milan, Leonardo spent years experimenting with the casting of bronze and the working of iron and wood to invent weapons of war, but when his interests shifted to work which has become classic in art and which carried with it the teaching of apprentices, he still looked for support to the government, not always successfully. I can perhaps extend this thought from the fifteenth to the sixteenth century with a quotation from *The Autobiography of Benvenuto Cellini.* Cellini quotes a letter to him from the Cardinal of Ferrara: "Benvenuto, our dear friend: During these last days the most Christian King here made mention of you, and said that he should like to have you in his service. Whereto I answered that you had promised me, whenever I sent for you to serve his Majesty, that you would come at once. His Majesty then answered, 'It is my will that provision for his journey, according to his merits, should be sent him'; and immediately ordered his Admiral to make me out an order for one thousand golden crowns upon the treasurer of the Exchequer. . . ."

Since we usually are most directly concerned with government-sponsored science, let me come back to an example near the roots of modern science. In 1826, two British Admiralty ships, the *Adventure* and the *Beagle,* began a survey of South American coastal waters. When, in 1828, Captain Stokes of the *Beagle* committed suicide in a fit of

despondency, his post was filled by a young man named Robert FitzRoy. FitzRoy, a man of inquisitive mind and large ideas, resolved long before he had completed his initial assignment that, if he got another such assignment, he should take responsibility for extending what was authorized by the Admiralty as a survey of coastal waters to an examination of the land and certain features pertaining to it. Ultimately, FitzRoy's idea, which was a clear extension of a specific set of Admiralty orders, led to an invitation to Charles Darwin to join the second voyage of the *Beagle*, also supported by the British Admiralty. It is hardly necessary to comment on the results.

In these historical notes, I have intended to establish only one fact—that what we now call government sponsorship of research and scholarship has been with us since education consisted of nothing more than the caveman's instructing his son in the most practical method by which to capture a wife. One must assume, then, that our present purpose is not that of arguing with government or industrial or other types of patronage to scholarship, but of examining the question of why today this has come to have certain fairly dangerous aspects for scholarship and learning. It is common to put the blame on the tremendous growth of governmental demands for specific facts or for service. Actually, the problem lies deeper than this. The area in which the problem lies includes some perhaps inevitable, but nonetheless unfortunate, changes in our attempts at education.

Let me take a slightly different approach. Somewhere in the twelfth century the Universities of Paris, Bologna, Salerno, and Oxford had their beginnings. Although these beginnings were, of course, affected by many factors, several of which are subject to argument, one can point out that one significant reason for their rise was the presence in certain places of some inspiriting and original teachers. Irnerius, at Bologna, and Abelard, at Paris, were probably responsible as much as anything else for getting these institutions started. The fact that civil and ecclesiastical authorities granted both status and privileges to scholars and masters unquestionably was another reason for the increasing strength of the early university. As one who spends part of most days in a dean's office, I think I should also emphasize that there was a long period of academic growth during which deans had no worries about libraries, laboratories, museums, endowments, buildings, trustees, catalogues, or memoranda from the president's office, none of which existed in the earliest days. The educational proposition for the dean who headed the masters of his faculty consisted of only one important set of responsibilities—accomplishment in learning and direct dealing with the individual students.

This leads me to maintain that our primary difficulty in connection with sponsored research and scholarship is one that pervades our whole educational system. We have lost sight of the central principle that the only successful core of the educational process is a critical relationship among human beings—the motivation of one person to learning by the accomplishments in learning by another, the challenge to development of one by the strength of character of another person.

The growth of populations and the growth of governmental responsibilities in hundreds of aspects has led to the development of a structure in higher education so complex that I shall venture that few administrative officers understand it in their own institutions. With the evolution of this complex structure and with the necessity for daily concern with a thousand aspects of the development of this structure, its proper nutrition and

maintenance, and its relationship to all sorts of social factors, it is little wonder that the light that was once focused upon the individual human being now shines upon buildings, laboratories, classrooms, and equipment. If one takes a frank look at our system of education in many institutions, I think one is bound to see much that is rather inhuman.

Now, if you ask me what institutions have succeeded best in defending their integrity of purpose, I shall answer you frankly that they are the institutions that have most successfully kept the light focused on human beings and their potentials and have not allowed it to be shifted any more than the urgencies of the situation have demanded. We cannot, of course, at the present time avoid the existence of educational institutions as institutions, in contrast to educational institutions as small communities of interacting scholars; but since we must accept the existence of institutions in this framework, I believe we must insist that the institutions have certain specific functions, and these functions must be related in a certain way to the real core propositions of the educational process. This being true, some of these functions need definition in relation to the problem of sponsored scholarship.

Before treating this matter, I should like to make clear that most of the constructive thinking that may be reflected in this paper has been given to me in printed form, in mimeographed form, or as a set of typed notes by Dr. J. Douglas Brown, dean of the faculty at Princeton. At a recent meeting of the Commission on Instruction and Evaluation of the American Council on Education, Dean Brown and I, who had never met before, and who have very different backgrounds, different interests, and who work in the academic world two-thirds of a continent apart, found ourselves in what was to both of us, I think, heartening agreement on some basic principles. He has stated these principles very articulately. I would like to present directly his proposition on preserving the freedom of colleges and universities in the face of increasing needs of government for research findings.

The primary function of the institution is to assure freedom of initiative in teaching and scholarship—freedom in mission and policy. The institution bears the obligation to select the greatest potential available to it in teaching and scholarship. Its continuing obligation is the preservation of the freedom of the individual teacher-scholar so that he may exercise his initiative, both in his own search for truth and in his teaching the truth as he sees it. Proper discharge of these obligations clearly requires certain changes in outlook in many institutions. The free teacher-scholar as a source of truth is more important, over time, than the immediate products of scholarship and research he may provide. Moreover, the teacher-scholar as such a source, as a person of high talent and potential contribution, is perhaps our most precious single "capital" asset. The selecting and guarding of the teacher-scholar, therefore, is a critical matter to which the institution must give its primary attention. Freedom of initiative such as the institution can give its teacher-scholars acts and reacts in a subtle but powerful manner.

In choosing his field of study or teaching, the teacher-scholar must be free to match goals to his inherent interests and powers. If intellectual curiosity and enthusiasm are aroused, not only the intuitive, creative processes are more effective but also teaching gains greater response. Further, there is far greater assurance that significant progress will be made in the search for truth if a large number of individuals seek elements of truth of deep interest to *them* than if some external agency seeks to control the search and to secure conformity on the part of unchallenged and uncommitted participants. Conformity can, however, be enforced by subtle means, including the availability of jobs, facilities, or other support in one field

and not in another. While economic influences are difficult to eliminate, it is the task of those concerned with the long-run development of high talent in teaching and research to lessen their impact, rather than to increase them.

This is the delicate and yet critical task of the university, acting within the limitations of its resources. The university must encourage differentiation of attack on the wide horizon of truth; yet it must confine such attack to those areas which it can support adequately. In the past, no single source of funds available to the university sharply distorted its ability to provide freedom of initiative to its teacher-scholars within the broad area of its chosen province. After World War II, however, this condition no longer existed because of the vast amount of funds granted to universities for work in specific fields of science and engineering of concern to the government.

In order to assure its integrity and balance, the response of the university to this situation must be twofold: The university must exercise self-restraint and close control in respect to the contracts for research offered by government. It must develop enlarged, countervailing sources of support for those areas of scholarship and research not of interest to government.

Furthermore, both aspects of response involve institution-wide policies and procedures which are essential to the survival of a free institution. But both are even more essential in the assurance of the true freedom of the teacher-scholar from distorting economic influences.

To effectuate these essential responses, then, there must be close cooperation between teacher-scholars, as such, as general faculty representatives, and institutional officers concerned in the general character and economic health of the university as a whole. Thus, the impact of governmental needs and appropriations adds to the already existing necessity that the planning and policy-forming functions of American universities be far better integrated and more effective than ever before. In such integration the core organization for planning and policy formation should include representation of faculty, administration, and trustees, since the freedom of the institution and the freedom of the individual teacher-scholar are alike related to the professional judgments, administrative policies and procedures, and financial resources.[1]

To these propositions of Dean Brown about the obligations of our academic institutions in the maintenance of their integrity in relation to government patronage of scholarship, I wish to add a charge to government and industry. This charge, too, is derived in considerable measure from Dean Brown's thinking, as expressed in some of his writings. The charge, which I have given elsewhere, is that, although government and industry now recognize their obligation to forge a coat of mail that gives a sense of security to our people, government and industry alike will fail if, in discharging their obligation to forge this armor, they neglect the man within, the development of his intellect, his imagination, the qualities that make him a human being. The value of the coat of mail is incalculably less than the ability of the creative human being. The coat of mail is incalculably less valuable, in Dean Brown's words, than the teacher-scholar as a source of truth.

My opening notes dealt with earlier periods of education. I should like to conclude now by going back still further, to the fifth century B.C., when a man named Socrates gave up scientific studies at an early age because in his day they did not involve the use of any critical methodology. Socrates was not a member of a faculty. He wrote no learned papers, or, if he did, they have never been found. He had no disciples as such. But nearly twenty-five hundred years later, one must admit that his thinking and his ideas were an influence of unusual importance. In the words of a man who has studied his

[1] An unpublished memorandum by J. Douglas Brown on the role of research in higher education.

thinking and his ideas with care, the basis of this influence was "a common reverence for a great man's intellect and character." Perhaps it is not too much to suggest that it is an institutional function to select and develop the highest possible degree of greatness and that it is the proper function of sponsored scholarship to unfold intellect and develop character.

In accepting the charge that the proper function of sponsored scholarship is not only to assemble facts, but, more importantly, to unfold intellect and develop character, I felt obliged to recommend that the responsible legislative and industrial agencies put aside the question of political expediency and begin with a forthright examination of how this problem of government and industrial sponsorship has been met elsewhere. Clearly, Great Britain and certain Western European countries have effected a more satisfactory solution than we have; Canada has effected a more satisfactory solution; and there are some very good reasons for believing that the government of the Soviet Union, despite all the factors of a quite different social framework, has solved this problem more satisfactorily than has the United States.

I agree that we must attempt to solve the problems in the sponsorship of research and scholarship more effectively, no matter how difficult they may appear. I wish to add only that there is some urgency about recognizing their nature and effects and about designing better solutions.

A Larger Look at the University Calendar

DAVID L. McKENNA

THE ANNUAL dissatisfaction with the academic calendar has gained formal respectability within recent months by the serious study that has been given to improving the efficiency of university education and the utility of university plants. Although all of the institutions of higher education are aware of these needs for improvement, the universities, with their larger enrollments and more extensive operations, have been the focal point of pressure. Consequently, there are few universities which have not approved a long, hard look at their present semester or quarter system in order to find out if their programs can be improved by a modification, change, or innovation in the academic calendar. Because of this widespread professional interest, the problem has also gained recognition in the popular literature, and such a radical change as the trimester system has become a subject for public discussion.

Aroused interest in the academic calendar is the result of three unrelenting forces prodding the universities. First, the present and prospective size of undergraduate enrollments demands an increase in the service population of the universities. With an enrollment explosion simmering at their doorsteps, the university administrations find a change in the academic calendar as the most economical and least painful way to educate more students with the present faculties and facilities.

Second, an increasing percentage of college-age youth is seeking higher education and bringing with it a wider range of interests and abilities. This change, coupled with the development of new specializations in professional fields, has made the universities realize that they must improve and extend their services to a new breadth of educational need which can best be accommodated by a more flexible and lengthened term of operation.

Third, the public criticism of the competitive output of American science and of the leisurely pace of collegiate education has been interpreted as an insistence that the universities accelerate the academic career, particularly for the gifted student. Although the semester and quarter systems have adaptations for purposes of acceleration, they are tradition-bound to a summer vacation and to four sentimental steps toward graduation. Therefore, a modification or transformation of the academic calendar is considered necessary to increase the present and potential supply of competent scholars and technicians.

With increased numbers of students, improved services, and accelerated programs as their goals, a large number of universities have appointed study committees to review the problems and patterns of the various academic calendars in order to have a rational basis for determining whether or not a change is advisable. In preparation for a study of this type, a research group at the Ohio State University reviewed the publications, minutes, and reports which were obtained from over thirty schools considering a change from one system to another. While providing a comprehensive background for a study at Ohio State, the studies are subject to some criticism. For instance, the majority of the studies were concerned with the advantages and disadvantages of the various calendar systems, that is, semes-

ter, quarter, and trimester. In most cases, the pros and cons of a system were listed without an attempt to weigh the relative importance of such diverse items as the articulation with secondary schools, the quality of learning experiences, faculty loads, and academic counseling. Also, the comparisons stressed the administrative aspects of calendar problems rather than the educational implications. These inherent limitations may be the reason why the studies have rather consistently concluded that no one calendar pattern is distinctly superior to another and that a change from one system to another is more a matter of institutional preference than of demonstrated educational merit.

The major weakness of these studies, however, is the fact that the problems of the academic calendar have been divorced from the total planning concept of the university. Rather than being conceived as a working part of a coordinated institutional operation, the calendar seems to be isolated as a mechanical element which can be independently manipulated. Consequently, the studies seem to emphasize a problem-centered approach which is aimed at alleviating the disgruntled feelings of vocal faculty members or the pressing dilemmas of a beleaguered administration. In such cases, a problem-centered approach is sufficient because the results are usually in the form of changes in procedure which improve the situation but postpone the larger issues. On the other hand, if the study of the academic calendar is important enough to be considered an integral part of advance planning for improving the effectiveness of the university, then the purpose and direction of the institution become as important as the present instructional and administrative problems of the calendar.

Because the survey of previous calendar studies produced limited results, the preliminary calendar study at the Ohio State University was extended to include an analysis of the facts and trends at the university which had implications for the academic calendar. Facts about the university and its constituency were gathered from the available publications, minutes, and reports. These documents and the transcripts of more than one hundred interviews, which had been held as a part of the materials for a long-range program of campus planning, were reviewed for the purpose of finding trends in the educational program which might affect the university calendar. Having identified these trends, the implications for the present and future calendars were posed in the form of questions which would require additional institutional research. Even at this early stage, the nature of the trends and the questions provided the basis for making some initial conclusions about the academic calendar which could be used as guides for further study. While the trends in university education which are evident at Ohio State are the result of using this method in only one school, the literature tends to verify these directions for the American university. Therefore, they are reported here as generalizations which are assumed to have some applicability for other university programs.

The most significant trend in university education is the formal or informal definition of the unique purpose of the university as an institution which emphasizes the acquisition, accumulation, and dissemination of knowledge at the graduate and professional school levels. While the undergraduate schools are acknowledged as a continuing part of this purpose, the law of proportion in interest and planning gives primacy to the advanced levels.

This major emphasis in university education is spelled out in the concurrent trends in enrollment, curriculum, function, and organization:

1. Plans are being made to serve graduate and professional school enrollments

which will double and even triple within the next fifteen years.

2. Undergraduate enrollments are increasing, but on a restricted basis because of selective admissions and/or selective retentions.

3. The curricular emphasis in the university is directed toward the graduate and professional functions as new specializations are being developed; an extended length of time for professional preparation is being considered; and the demands for continuing education, both on and off the campus, are increasing.

4. Research is being stressed as a critical service function of the university, and an increasing interdependence is being developed between governmental and private agencies and the university through sponsored research.

5. Two years of liberal arts or general education is being stressed as prerequisite for entrance into the professional school with four years of preprofessional education in prospect.

6. Teaching at the undergraduate level is concerned with the means for improving instruction to larger groups of students by electronic aids and experiments with class size. Teaching at the graduate level, however, is directed toward the individualization of instruction through smaller groups, laboratory experiences, and personalized demonstrations.

7. With the increasing size and complexity of the university, the colleges are seeking more autonomy for operation at the undergraduate level and more opportunity for interdisciplinary activities at the graduate level.

This list of trends in university education is neither comprehensive nor all-inclusive. It is sufficient, however, to stress the point that the problems of the academic calendar cannot be restricted to numbers and curricula at the undergraduate level in the university. The larger view of the academic calendar necessitates asking: "Do the present facts and projected trends for the purpose, enrollment, curriculum, and organization of the university have an effect upon the calendar system which is adopted?" The answer is obviously rhetorical and calls forth other questions, such as the following:

1. With the primacy of planning for graduate and professional education, which type of academic calendar is preferable for the kind of instruction and research work required at this level?

2. With rapidly expanding enrollments in the graduate and professional schools and a more selective enrollment in the undergraduate colleges, which type of academic calendar can best be articulated with these diverse programs?

3. With the prospects for increasing (*a*) the requirements for preprofessional education, (*b*) the length of professional preparation, and (*c*) the services of continuing education, which type of academic calendar is best adapted to these kinds of education?

4. With the growing emphasis upon research, and particularly sponsored research, which type of academic calendar is most compatible with research operations?

5. With the emphasis upon large-group instruction at the undergraduate level and individualized instruction in the graduate and professional schools, which type of academic calendar is flexible enough to meet the needs of both kinds of instruction?

6. With the organizational trend toward the larger, more complex university at the same time there is increasing autonomy at the undergraduate level and more interdisciplinary cooperation at the graduate level, which type of academic calendar best serves this institutional concept?

While the specific answers to these questions must be provided by authoritative data from within the individual

university, the trends which support them and the nature of the questions suggest certain preliminary conclusions which must be considered in university calendar planning.

First, the trends in university education make it imperative that an academic calendar for the year-round operation of the institution be adopted. This is required by the expanding enrollments and the limited facilities, the range of programs anticipated at both the graduate and undergraduate levels, the increased length of time in prospect for professional education, the demand for continuing educational services and the growing emphasis upon sponsored research.

Second, the academic calendar of the university must be flexible enough to fit the contrasting patterns of graduate and undergraduate education. Most of the studies of the academic calendar have come about because of a concern over the present and future enrollment pressures at the undergraduate level. This position alone, however, is unrealistic in a university which has chosen to emphasize the graduate, professional, and research functions. Furthermore, the trends which have been cited indicate two different directions for graduate and undergraduate education. The undergraduate program trends are toward selective enrollments, general education, large-group instruction, and autonomy of operation. At the graduate level the emphasis is upon rapid expansion of enrollments, research and specialization, individualization of instruction, and interdisciplinary activities. Certainly, a decision about the academic calendar should not be made without considering its effect upon both of these areas, and, particularly, graduate and professional education and research.

Third, the academic calendar of the university must go beyond the present needs and problems to anticipate the possibility of radical changes in enrollments and curricula in the future. Calendar planning has been infected with the pressures for expediency. The trends in university education, however, suggest the possibility of such changes as an explosion in enrollments, lengthening of the time for professional preparation, new specialties and new knowledge, four years of preprofessional education, and new teaching techniques. While the exact nature of these changes cannot be anticipated, the academic calendar should be futuristic enough to encompass the possibilities of such changes.

Fourth, the academic calendar of the university must be articulated with the present and future requirements of graduate work, professional fields, continuing education, and research, as well as with the requirements of secondary and undergraduate education. Previous studies of the academic calendar are replete with the problems of articulation with high school graduation, college transfers, extracurricular activities, and employment opportunities. Without de-emphasizing the importance of these problems at the undergraduate level, the trends in university education open up an equally important area of articulation with the prospect of new fields of specializations, practicums in professional experience, in-service education, and the time requirements for new areas of research.

Fifth, the academic calendar of the university must give precedence to the educational advantages which are gained rather than the administrative problems which are solved. The studies of the academic calendar which were reviewed frequently cited the advantages of the longer term and the reduced number of courses for the assimilation of learning, the development of critical thinking, and the quality of written research work. Yet, these advantages were often counterbalanced in the listing by such administrative problems as changes in proc-

essing, counseling, and bookkeeping without an evaluation of their relative merits. If the university is to emphasize graduate and professional education, then a decisive factor in the choice of the calendar should be the instructional implications for the individualization of instruction, analytical thinking, research opportunities, and written work. Of course, this should be done without neglecting the educational needs at the undergraduate level and the attendant requirements for intellectual activity and effective instruction.

Each of these trends, questions, and conclusions has been directed to the thesis that the academic calendar cannot be divorced from the purposes and the long-range planning of the university. The academic calendar must be more than a tool for relieving the pressures of expedient problems. Its nature must be as basic as the curriculum in reflecting a sensitivity to educational needs and intelligent planning for the future. Not that a mechanical element, such as the calendar, should dictate the direction of the university, but a decision about this important area cannot be made unless it is an integral part of the total concept. Calendar planning for the university must be extended beyond a summation of pros and cons about quarter, semester, or trimester systems, and it must be enlarged to comprehend the unique and primary functions of the university. This "larger look" at the problem of the academic calendar may result in (*a*) modifications in the present systems, (*b*) radical changes in the academic year, (*c*) articulated, but different, calendars for the individual colleges, or (*d*) a uniform schedule of operation in cooperation with the larger social, professional, and academic constituency of the university.

The questions which were posed in this report can be answered by obtaining information from institutions which are on different calendar patterns, by sampling university departments and personnel on the present and future problems of the academic calendar, and by a planning committee which weighs and evaluates the type of academic calendar which is coordinated with the long-range plans of the institution and the direction of the American university. These results, then, can be combined with the knowledge gained from other studies of the academic calendar and the literature which compares the various systems in order to arrive at a decision which represents both the present and future requirements for the university calendar.

Engineering Education in India

C. RAJINDER MANGAT-RAI

THE NUMBER of engineers trained each year by the advanced countries has been cited, in this technical age, as an index of future industrial and military power. Of equal significance is the number being trained by the underdeveloped countries because on this will largely depend the speed with which these countries can overcome poverty and unemployment and achieve the difficult breakthrough to economies of self-sustaining growth. It is, therefore, of interest to see what has been happening recently in engineering education in India, where development is now taking place under national control by democratic methods.

When Indians assumed control over their own affairs in 1947, a dynamic spirit, inspired by their newborn independence, possessed the nation. New internal and external policies came into operation. Home industries received a stimulus. To understand the developments that are now taking place in Indian engineering education to meet the challenge of this resurgence, one must look back on the state of India's economy prior to independence.

The British period

In 1947 India was, in terms of per capita wealth, one of the poorest countries. The tempo of her economic life was slow. She lagged far behind Western countries in industry. This poverty and industrial backwardness did not always exist. It came about by the accidents of history in the last three hundred years. In the fifteenth century, India's riches and crafts attracted merchant adventurers from Europe. Columbus was seeking a route to wealthy India when he set out across the Atlantic. At about the same time, Vasco da Gama pioneered the route around the Cape to open up trade with India by sea.

In the trade with India, Britain's naval supremacy enabled her to get the better of her rivals, the Portuguese, the Dutch, and the French. Following this, she was led to combine exploitation with trade, and Indian wealth flowed westward. It was this sudden access of riches that provided the capital for the industrial revolution in Britain. Britain developed the classic policy of colonialism in using India both as a source of raw materials and as a market for manufactured goods. She inhibited the growth of Indian industry so that Indian crafts fell into decline. Indian artisans were obliged to turn to new employment, and their skill atrophied through disuse.

Britain applied this policy with humanity and moderation. Clive's defense in 1767, when he was assailed in Parliament for enriching himself, tells of the absence of ruthless extreme that characterized British conduct. He said:

> Am I not rather deserving of praise for the moderation that marked my proceedings? Consider the situation in which the victory at Plassey had placed me. A great Prince was dependent on my pleasure; an opulent city lay at my mercy; its richest bankers bid against each other for my smiles; I walked through vaults that were thrown open to me alone, piled on either hand with gold and jewels. Mr. Chairman, at this moment I stand astonished at my moderation.

Military necessity in two world wars compelled Britain to start some industries in India. The sizable Indian steel industry is a World War I baby, and

World War II yielded a crop of lusty infants that are now growing into manhood. At independence, India was not entirely without an industrial base to her economy; in particular, her steel, cement, and textile industries supplied the bulk of her own needs in these commodities. In general, however, she was predominantly an agricultural country, with 70 percent of her people living and working on the land. She was dependent on imports of manufactured and processed goods down to simple and commonly used items like bicycles, sewing machines, canned food, and cosmetics.

As industry was on a small scale, there was little demand for engineers. The developmental work done by Britain in India was planned and executed by British engineers trained in Britain. India, with its wide-open spaces, lofty mountains, and broad rivers provided a wonderful practice ground for their profession, and they have left behind works that do them credit—a good network of main roads and railways and some magnificent examples of canal irrigation. Even though there was not a big demand for Indian engineers, the rulers of India at that time had the enlightened foresight to start two engineering colleges quite early—the Thomason Engineering College at Roorkee in the State of Uttar Pradesh, in 1847, and the College of Engineering at Guindy, near Madras, ten years later. This compares favorably with what happened in England itself. Cambridge University, for example, did not start an engineering department until the 1890's. (Such a comparison may be misleading for, ever conservative, Cambridge lagged behind others in this matter, as it did in the conferment of degrees upon women.)

These early Indian colleges supplied engineers and technicians for subordinate positions in the Public Works Department and the Irrigation Department. These men became subdivisional officers, overseers, and surveyors. Before the end of the British era there was a measure of Indianization of the officer ranks of these engineer services, and a few more engineering colleges and polytechnics sprang up. Of the new colleges, the ones at Bombay, Poona, and Calcutta were the largest and best equipped. These turned out mainly civil engineers employed by government. The number of students in engineering colleges throughout India was somewhat less than three thousand at the attainment of independence. A certain number of Indians went to universities abroad for an engineering education. The number who did this was small because there was limited opportunity for employment on their return home.

India's problem at independence

Independent India took stock of the economic situation in which she found herself. She had a large population in which hunger, ignorance, and disease were rife. Britain had established law and order and had constructed a rail and road transportation system and irrigation works. These, combined with the discoveries of quinine and antibiotics, had served to prolong the span of human life. The toll taken by flood and famine, by malaria and typhoid fever was reduced. There was a sharp rise in population. Too many people lived on the farms that were uneconomically small. The land, though naturally rich and capable of growing two crops a year, gave a low yield. There was not the work in industry to draw people from the land. Indian industry and allied services employed scarcely five million. Industry was not self-sustaining; it was ill-balanced and had large, undeveloped gaps.

Against this, India was well endowed with natural resources. She had plentiful water from the rain trapped by the Himalayas. Admittedly, it was unevenly

distributed and tended to pour down in the three monsoon months and flow to waste into the sea, but this could be remedied by the construction of storage reservoirs and regulating works. She had large supplies of iron ore and coal. She was rich in manganese, mica, and bauxite. Not much oil had been found so far, but there were large deposits of thorite from which she eventually could get all the power she was likely to need in the next hundred years. She had enough good agricultural land to feed an even larger population than she now possessed provided the land was irrigated and farmed efficiently. Best of all, she had abundant human resources, men and women with potential skill and a willingness to work hard, who lacked only a constructive outlet for their energies.

India set up a planning commission on broad democratic lines to draw up a blueprint for action. This commission has been responsible for creating the three successive five-year plans. The outline of the third plan has recently been made public. The aim of the plans has been to improve living conditions for the individual man so as to give him opportunities to develop himself and enrich his life. Despite Gandhi's opposition to industrialization, India decided at the start that she must create her own industries with all speed, principally to provide work so that the numbers dependent on the land could be reduced, but also to increase the national wealth. Gandhi's doctrine of creating a simple rural economy with cottage crafts was abandoned. The crux of the problem was to industrialize and develop India's resources fast enough to prevent conditions from becoming so unbearably oppressive upon people as to drive them to violence and revolution. As industry grew, India's agriculture could be placed on a sound footing, for only then could urgently needed land reform be carried out.

The need for engineers

When national planning began, one fact stood out at once. India would need engineers and technicians in large numbers. She would not be able to send many Indians abroad for training, for she would have to husband her foreign exchange resources. She would have to expand her present engineer training capabilities considerably. The Indian government had available the Sarkar report, compiled in 1946, on India's future needs in technical education. This report was a survey of the situation and made recommendations for expanding facilities for training engineers and technicians. Also, there existed a body called the "All-India Council of Technical Education" (the AICTE), which had been set up in 1944 on the initiative of Sir John Sargent, who was at the time educational adviser to the government. This council was an advisory body with no executive power. The government was now able to make quick decisions based on the findings of the Sarkar report and to use the existing AICTE for furthering its purposes. The following program was outlined:

1. The ratio of engineers to technicians to be trained should be one to two.

2. Four new institutes of technology should be set up for the primary role of postgraduate work and research. Up to that time, few Indian colleges offered postgraduate or research facilities, and this measure was intended to make good this deficiency. In addition, it was recommended that some of the existing colleges should develop postgraduate and research facilities.

3. A stronger, more representative AICTE was to advise the government on technical education and to assist in directing its expansion and development. Industry, the public services, and research establishments should be among the interests represented on this body.

The government thus endorsed the Sarkar report and has been implementing its recommendations. With each successive five-year plan, an increasing allotment of money has been made to technical education. There has been a steady growth in the number of students studying engineering. (See Table 1.)

TABLE 1: RECENT EXPANSION OF ENGINEERING EDUCATION

YEAR	ADMISSIONS TO COLLEGES AND POLYTECHNICS*		
	To Colleges	To Polytechnics	Total
1956.....	6,632	10,242	16,874
1957.....	10,000	15,800	25,800
1958.....	10,670	18,330	29,000
1959.....	13,500	21,700	35,500
1960.....	13,900	23,300	37,200

* The third five-year plan provides for an increase of admissions by 1966 to 18,000 to colleges and 35,500 to polytechnics, a total of 53,500 admissions.

New institutes of technology at Kharagpur, near Calcutta, and at Powai, near Bombay, have been set up and are now well under way. The institutes in Madras and Kanpur have begun functioning this year in temporary buildings. The Thomason College of Engineering at Roorkee has been converted into a university of technology and has become a fifth institute primarily for research and postgraduate work. Under a Colombo Plan scheme, Roorkee is giving training to students from neighboring Asian countries. It has the largest group of foreign students of any Indian college of engineering. In addition, there has been a proliferation of new colleges and polytechnics whose distribution over the country has been planned to meet the future needs of industry.

Pattern of Indian higher education

All ancient seats of Indian higher learning, such as the University of Nalanda and the University of Vikramsila, disappeared in the succession of political upheavals which disrupted India's cultural life once the Moslem invasions began. The British, in their two-hundred-year period of rule, inaugurated a new system that is basically British but has taken on Indian overtones in the course of its development.

Indian universities of today in their organization and outlook generally follow the pattern of London. The university is the authority that lays down syllabi for all subjects, including engineering, medicine, and law, and sets and conducts examinations for high schools and colleges in a given region. The high schools prepare students for the matriculation examination of the university in whose region they happen to be, and the colleges prepare students for examinations for higher degrees, including an intermediate or junior degree, the bachelor of arts, the master of arts, and doctorate.

The schools and colleges may be either private or public, large or small, and are often scattered over a wide area. Thus, in British India, students of a college in Peshawar, Northwest Frontier Province, took the Punjab University examinations in Lahore three hundred miles to the south. Universities are autonomous authorities but receive grants of public money, normally through the state government. Three universities are exceptions to the rule of receiving grants through the state government: Banaras Hindu University and Aligarh Muslim University in Uttar Pradesh, and Visva-Bharati University in West Bengal, started by Rabindranath Tagore at Santiniketan, all receive their subsidies of public money directly from the federal government.

This system is in striking contrast to that in the United States, where colleges are autonomous both academically and organizationally. In the U.S., they set their own scholastic standards and con-

duct their own examinations. In India, the scholastic standard being set by an authority outside the college, faculty and students together are, as it were, engaged in battle against a common enemy —the examining board of the university. This system has its drawbacks, but there are compensating advantages. The faculty likes it because, having no say in the grading of their students, they are protected from approach and pressure from either students or parents.

In passing, it may be mentioned that the four new institutes of technology are not affiliated with any university. They are autonomous institutes which set their own standards and confer their own degrees. Possibly they are setting a pattern for the future.

There is a variation in the number of years of schooling required before entering college. A student can take the matriculation examination of a university after ten years in school, or he may take the higher secondary examination after eleven years. The latter will usually give him one year's credit at a university. Again he may take an examination like the Senior Cambridge—which is still popular among schools run by churches and missionary societies and is recognized by Indian universities—and gain admission to a college, receiving one year's credit. The period required at a university for graduation varies too. It is either three or four years; if four, there is an intermediate examination to be passed after two years. India is now attempting to create a standard pattern over the whole country. This will comprise eleven years at school, culminating in the higher secondary examination, followed by three years at the university for the bachelor of arts degree.

Engineering colleges and polytechnics will adapt themselves to this pattern. In the past, engineering colleges have admitted students who have passed the intermediate examination in mathematics, physics, and chemistry and then given them either a three-year or four-year course for the bachelor of science in engineering. Now they will take students directly after the higher secondary examination and give them four or five years' education before graduating them. From present trends, it appears that the course will more often be five years than four.

India has set up a statutory body, the University Grants Commission (commonly referred to as the UGC), for allotting and controlling the expenditure of the money appropriated from the federal budget for higher education, including technical education in colleges and polytechnics. For much of this money, the state governments are used as the agencies for the supervision and control of its expenditure; the remainder, given to institutions not coming under the jurisdiction of the states, is directly under the control of the UGC.

To assist the UGC in carrying out its functions in the important field of technical education, the AICTE acts as an advisory body. This council, whose membership is drawn largely from industry, the public services, and other employers of engineers, advises on syllabi, equipment, and such norms for technical teaching as size of classes and number of contact hours to be taught by different categories of teachers. This council also assists the UGC in implementing its schemes for technical education and, for this purpose, has four regional subcommittees with their respective headquarters—North (Kanpur), South (Madras), East (Calcutta), and West (Bombay). These are the four major regions into which India has been divided for purposes of higher technical education.

The above constitutes a highly centralized system for giving public subsidy and unified direction to technical training and is resulting in standardized

units. Colleges are tending to have the same syllabi, the same equipment, and identical buildings. However, in a period of shortages of equipment, during which growth must be in accordance with the needs of state planning, the system is probably the right one. It does, of course, suffer from the defects of any large system of central control. Red tape, delay, and frustration are not unknown. C. D. Deshmukh,[1] former finance minister of India, is the present chairman of the UGC. He is an able and determined man, in close touch with Nehru. He is succeeding in giving Indian higher education the lift that it sorely needs.

Characteristics of Indian engineering education

While there is large-scale unemployment and underemployment in India in nearly every vocation, this is not true for engineering. The expansion of industry and the general development of the country has created a big demand for engineers. Men graduating from colleges and polytechnics have no difficulty in finding jobs. Their preference is usually for government employment, but attractive openings in industry are increasing yearly. There is thus the keenest competition among students for the limited number of vacancies in engineering colleges and polytechnics. Most colleges select students for admission by holding an examination. Those who do well are given a medical examination. Final selection is done through interviewing those who have got over these first two hurdles. Engineering colleges and polytechnics—and this is true of medical colleges as well—get the cream of students. Once a student wins a place for himself in a college, he will do his best to complete his course successfully even if he discovers that he does not really have a taste for engineering, because he knows that a job awaits him at the end. The wastage rate is small. Transfers from one college to another are rare.

In recent years there has been marked deterioration of discipline among students in Indian universities. Strikes have been frequent, and there has been occasional rioting. The causes of this indiscipline are readily apparent. Anxiety about the future, conditions of overcrowding in classrooms and dormitories, and lack of incentive to hard work have combined to exert their inevitable effect on student behavior. This lack of discipline has not extended to engineering students, who are assured of future employment. They have, besides, to work harder than the average humanities student and have little time for diversions such as strikes and rioting. Moreover, they value their place in their school too highly to risk expulsion.

Indian students of engineering seldom do any earning while they are learning. In the first place, the opportunities for casual employment are few, and, second, they consider their studies too serious a matter to allow any deviation from the aim of passing that all-important final examination. Many engineering colleges require their students to spend part of their vacation in a factory, workshop, powerhouse, or in the field doing practical work in their own branch of study. Industry and government departments are cooperating to provide students the facilities for this apprenticeship. Sometimes, though rarely, students are paid for the period of apprenticeship.

Language and script

English is still being used as the medium of teaching in engineering education, and no move has been made yet to change this as has been done in the teaching of other subjects in schools and universities. No doubt this is because the task of providing technical textbooks

[1] Mr. Deshmukh has recently relinquished the chairmanship of the UGC.

and journals in Indian languages is formidable, and time and experience will show how best to bring about the change from English.

When India became independent, there was a strong nationalist feeling that English should be abandoned as the medium of higher education and as the official language as soon as practicable. A clause was incorporated in the Indian constitution that Hindi, written in the Devanagari script, would ultimately be the official language of the federal government and for the proceedings of Parliament. A period of time was specified for the gradual replacement of English.

In 1835, on the recommendation of Thomas Babington Macaulay, then legal member of the Governor-General's Council, English was adopted as the language in education and displaced Persian as the language of government and the law courts. The object of this was, in Macaulay's words, to create a body of Indians

> who may be interpreters between us and the millions whom we govern, a class of persons, Indian in blood and colour, but English in taste, in opinions, in morals and in intellect. To that class we may leave it to refine the vernacular dialects of the country, to enrich those dialects with terms of science borrowed from the Western nomenclature, and to render them by degrees fit vehicles for conveying knowledge to the great mass of the population.

English was introduced as a second language at an early stage of the students' career in school, and the change to English as the medium for all work took place two years before graduation from high school. All teaching in universities was in English. The result was that English was increasingly adopted for everyday use by educated Indians, and its currency in business and government became general. Regrettably, not much was done to enrich Indian dialects with terms of science nor to translate scientific and technical works into the vernacular. A notable lone effort in this direction was made by the Osmania University in Hyderabad. It sought to assimilate technical terms into the Urdu language and to use it as a medium for teaching science.

India, in deciding to discard English as the official language and as the medium of education, was faced with no light task. It was a task she began with enthusiasm and hoped to accomplish quickly. With the passage of time, the first enthusiasm has waned. The pace of change has slowed down. There has been a considerable revision of opinion on the desirability of getting away from English. In education, the plan was that English would be displaced first in the lower grades by Hindi, or other vernacular language, and the process of displacement would gradually proceed from bottom to top as the availability of textbooks and teachers permitted. One of the Indian languages, depending on the region or community to which the school belonged, would form the new medium of high school education, but if the medium was other than Hindi, then Hindi would be studied as a second language. Hindi would eventually be the normal medium for higher education.

This plan is being implemented but is not applicable to technical education, which is to continue in English for the present. Already English has ceased to be the only medium for graduating from high school, and it is beginning to be discarded in universities for many subjects in the humanities.

The policy for the displacement of English has been unpopular in many quarters for diverse reasons. It has been particularly unpopular in the Telegu- and Tamil-speaking areas in the south. Students in the south, using their own language as the medium of education, did not like to study Hindi as a second

language. They would have preferred to learn English as a second language because of its greater usefulness; to learn both was to create too great a mental burden. It could only be done to the neglect of other subjects. There have been indignant protests against Hindi, and many children, with their parents' support, are learning English as their second language.

In Bombay, state opposition took another form. There were many schools in the state, mostly run by churches and missionary societies, which were using English for instruction. These were now compelled to change to Marathi or Gujarati. This evoked strong dissent and the matter was taken to the Supreme Court as an infringement of the human rights guaranteed by the constitution. The Supreme Court decreed that English was one of the Indian languages—that of the Anglo-Indian community—and therefore could be used as the medium in schools belonging to the Anglo-Indian community. This ruling was received with satisfaction by many people, not Anglo-Indians alone, because most of the better schools in the state were operated by churches and missionary societies, classifiable as Anglo-Indian, using English as the language medium. Many otherwise ardent nationalists sent their children to these schools.

In the thirteen years of India's independence, the public's attitude toward English has changed from a hostile to a tolerant one. It is recognized as a useful language to know. Opinion is coming round to regard it, not as a foreign language, but as an intellectual instrument which is as much one's own, if one has it, as the language of mathematics or science. The widespread knowledge of English in India is acknowledged as an asset, one that should not heedlessly be thrown away. Has not this asset helped to make India's voice heard in the councils of the nations?

A growing section of educated public opinion is coming to the view that even if it is right for India to change to Hindi as the official language, it is unwise for her to adopt the Devanagari script in preference to Roman script. Devanagari, notwithstanding its classic position and phonetic qualities, is practically unknown outside India's boundaries. Any letter directed abroad would have to be addressed in Roman script. The writing of Devanagari takes up more space, and its alphabet of more than thirty letters makes its use on typewriters slower. The biggest disadvantage of all is that it takes longer to read and write than either the Roman or the Arabic script. China is discarding her old script, which has been a national handicap to intellectual growth for centuries, in favor of the Roman script. Should not India do the same?

English will remain the medium for engineering education for a period of another fifteen years at least. This will make it easy for Indian engineers to exchange information and collaborate with fellow members of their profession in the West, and India's main technical help is coming from the West. This continued use of English should prove a powerful factor in enabling India to develop her resources quickly at a critical period in her economic growth.

Books and equipment

In the United States, every student of engineering has his little personal library of text and reference books. He also receives a copious flow of handouts from his college. He has access to excellent libraries. It is rarely that he feels starved for printed material on his subject. Indeed, his problem is to exercise selection and to make the time "to read, mark, learn and inwardly digest" the unexampled wealth of the written word available to him. The Indian student of

engineering, on the other hand, is often unable to get at the printed material he wants. Engineering textbooks, mostly published abroad, are very expensive, and seldom is there a prescribed textbook in a subject. At best, he can afford to buy a few standard reference books only. He must rely on taking extensive notes during lectures, on using the college library, and sharing with his friends. College libraries are generally well equipped. They stock multiple copies of the more important books. Reading rooms are kept open till late in the evenings on working days and all day on Sundays and holidays. Very often students are not permitted to take books from the library, but may study them and take notes from them there.

The McGraw-Hill Book Company has reprinted some of its books in Japan. These are identical with the American editions except for the paper. Japanese reprints cost less than half the price of their American originals and there is a big demand for them in India. More recently, the Asia Publishing House in Madras has obtained permission to reprint some British and American books in India, which again have a far lower price than their imported versions. These cheap editions are easing the textbook problem. Very little in the way of hectographed and cyclostyle notes are handed out to students for the reasons that paper is scarce and duplicating devices are not used on a liberal scale. American visitors to Indian colleges remark on the frugality with which paper is used and note that the disposal of waste paper is no problem. If the daily gleanings from wastepaper baskets can be taken as an index of paper consumption, then the consumption in Indian colleges cannot equal a tenth of that in colleges in the United States of America. The Indian college sweeper gets lean pickings indeed! What he collects he is able to sell at a good price in the bazaar.

The AICTE has laid down standards for equipment for laboratories and classrooms of colleges and polytechnics of different sizes. By American standards, the scale prescribed would be regarded as austere. Most of the colleges, including all the recently founded ones, are far below scale in equipment because much of it has to be imported, and it is not easy to obtain foreign currency for its purchase. Here is a matter in which there has been lack of coordination between the Ministries of Education and Commerce. One ministry decrees that an item of equipment is to be held by a college, while the other denies the college the import license to obtain it.

On the whole, colleges are well supplied with visual aids, such as film and slide projectors. Excellent films and slides may be had on loan from many organizations, including the USIS, the British Council, and the embassies of other countries. There is, in fact, a competitive salesmanship in technical and cultural wares on the part of embassies of countries on the two sides of the iron curtain. Colleges are taking full advantage of this unexpected harvest from the cold war. One common shortcoming among colleges, however, is an inability to keep audio-visual aids in running order. Maintenance standards are low, and spare parts are not easily available.

Shortage of teachers

There is a serious shortage of engineering teachers in India. One reason is the rapid expansion of engineering education that has taken place, which shows no signs of abating. The small number of older, experienced teachers has had to be spread very thin. This does not, however, fully account for the shortage. Promising young engineers are not being attracted to teaching. There are plenty of openings for them in public works de-

partments and in industry where pay scales are higher, where they will wield more power, and where the fringe benefits are greater. The Code of Manu gives priests and teachers a high status in the hierarchy of caste, but while the priest may still enjoy a respected place, the teacher, lacking the support of material trappings and power, has been unable to hold his assigned position. The possibility for an engineer-teacher to supplement his income as a consultant scarcely exists because of lack of demand for such work. One means of earning a little extra money that is available to teachers is private coaching, but the present shortage in faculty, entailing heavier individual teaching schedules, makes even this difficult. To date, very little research has been undertaken by engineering colleges, so that this particular academic area is not yet the magnet to those engineers who desire work in research that it is in some other countries. The net result is that quality of teachers has deteriorated badly. The situation is critical.

Conclusion

In India's present circumstances, her first priority problem is one of economics. It overrides and affects all other problems. Her survival depends on her ability to develop her resources quickly. Her situation is similar to, but worse than, that of Russia in 1917, worse in that she has less land and natural wealth and more people. Russia industrialized and eliminated abject poverty among the masses in forty years. India must achieve the same result working with democratic procedures in a shorter time if she is to avoid large-scale human misery. She can succeed only if she uses every device known and every short cut possible. She must take full advantage of the experience of other countries who have advanced to a maturer economic and social stage in their evolution.

If she is to accomplish this miracle of quick development, she will need engineers of the highest caliber in increasing numbers. She will need engineers with ability and resourcefulness who can design with an eye to economy in materials and equipment, men with flexible minds who can adapt modern methods to conditions prevailing in India. They will need to possess qualities of leadership as well as technical ability.

Engineering education is benefiting at present by the better employment situation among engineers than in other professions, and is receiving an undeserved proportion of the cream of students. The students of Indian engineering institutions are top-grade material as far as brains go. They possess good mathematical ability. They are able to express themselves logically in English on paper. Through lack of opportunity, their mechanical skill is often undeveloped, but many exhibit a quickness in making good this deficiency when the facilities of workshop and laboratories are placed at their disposal. Some, however, show a marked reluctance to work with their hands. They are shy of donning dungarees and dabbling in grease and oil. It is the heritage of the caste system which relegates manual work to the Vaisyas and Sudras that inhibits them. The great majority work hard and are keen to secure their degree or diploma. This excellent human material deserves equally good teachers but is not getting them yet. This is the cardinal weakness of Indian engineering education today.

The causes of the acute teacher shortage and the poor quality of teacher have been discussed. These are defects, harm from which could multiply out of hand. Unless an improvement can be made early, there is likely to be widespread deterioration in professional standards

among engineers in India, with resulting misapplication and waste of national resources. The basic, though not the complete, remedy lies in raising teacher salaries. This is relatively simple to achieve in India, where technical education is subsidized with public money and is, therefore, under a measure of control of the federal government. The matter of raising teacher salaries was under government consideration for three years. There was general agreement that teacher salaries should be raised, but the question of by how much was difficult to decide. Some advocated following the Russian example of making the teaching profession one of the highest paid in the country and carrying corresponding prestige, but this suggestion was not welcomed by civil servants. They raised the bogey of inflation as an argument against any substantial raise.

This balance of conflicting factors led to government inaction, which ended only in October 1959, when new pay scales for lecturers and assistant professors in engineering colleges were announced. These two categories of teachers were to receive a raise on the prevailing average pay and were to get 350 to 850 rupees ($75 to $80) and 600 to 1,500 rupees ($125 to $240) a month, respectively. This would bring their remuneration nearly on a par with engineers of comparable seniority in government, but not to the level of those in industry. In addition, a scheme for giving fellowships for postgraduate work to prospective teachers was inaugurated. The cost of both measures was to be borne by the federal government. These steps may reduce the teacher shortage but are unlikely to divert able and ambitious engineers away from industry to the academic field.

India is receiving substantial help from many countries in developing her technical education. The United States, Great Britain, Western Germany, and Russia have made the largest contributions. This help is coming in the form of equipment, of visiting professors, and scholarships for Indians to study abroad. With many diverse influences bearing upon the Indian system at a formative period of its growth, it is likely to develop a character of catholicity in outlook. Here is a sphere in which the eclectic Hindu mind, with its talent for assimilation, should find ample creative scope.

India has set up a framework within which engineering education can grow. It permits flexibility. The policy for its growth is controlled by the government through its twin instruments, the UGC and the AICTE. The structure is largely supported by public funds. The criticism may be made that there is a depressing sameness in the new units of education being set up. It may be more a handicap than an advantage for engineering colleges and polytechnics to be placed under the authority of university bodies primarily concerned with education in the humanities. The best solution of the language problem has not yet emerged. The agonizing change to the metric system of money, weights, and measures is yet to yield its benefits. Indian engineering education is in a state of flux, and it is early yet to pass judgment on these and other matters.

One thing is apparent: problems are being tackled with imagination and courage.

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Terms expiring October 1961

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Terms expiring October 1962

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Terms expiring October 1963

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Terms expiring October 1962

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Observers

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Terms expiring October 1962

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Terms expiring October 1963

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Terms expiring December 31, 1962

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Terms expiring December 31, 1963

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Terms expiring December 31, 1961

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H. I. WILLETT, Superintendent, Richmond (Virginia) Public Schools

Ex officio

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3. THE COLLEGE STUDENT

Commission on the College Student

Terms expiring December 31, 1961

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NEVITT SANFORD, Professor of Psychology, University of California, Berkeley

Terms expiring December 31, 1962

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Terms expiring December 31, 1963

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ROBERT E. L. STRIDER, President, Colby College

Term expiring with office held

RICHARD A. RETTIG, President, United States National Student Association

Term expiring end of academic year 1961

TERRI GALVIN, Executive Secretary, Intercollegiate Association of Women Students

4. INTERNATIONAL RELATIONS

Commission on Education and International Affairs

Terms expiring December 31, 1961

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WILLIAM E. STEVENSON, Aspen, Colorado

Terms expiring December 31, 1962

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E. B. EVANS, President, Prairie View Agricultural and Mechanical College

Terms expiring December 31, 1963

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CARROLL V. NEWSOM, President, New York University
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Association of Graduate Schools: ALLAN M. CARTTER, Dean, Graduate School of Arts and Sciences, Duke University

Carnegie Endowment for International Peace: LAWRENCE S. FINKELSTEIN, Vice-President, Carnegie Endowment for International Peace

Committee on Friendly Relations Among Foreign Students: J. BENJAMIN SCHMOKER, General Secretary

Conference Board of Associated Research Councils, Committee on International Exchange of Persons: FRANCIS A. YOUNG, Executive Secretary

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The Edward W. Hazen Foundation: PAUL J. BRAISTED, President

Institute of International Education: JAMES D. KLINE, Director, Washington Office

W. K. Kellogg Foundation: MAURICE F. SEAY, Director, Division of Education

National Academy of Sciences—National Research Council: M. H. TRYTTEN, Director, Office of Scientific Personnel

National Association of Foreign Student Advisers: JOE W. NEAL, President; Director, International Office, University of Texas

National Catholic Educational Association: MRS. WINIFRED R. LONG, Coordinator of Program and Research

National Council of the Churches of Christ in the U.S.A.: REV. HUBERT C. NOBLE, General Director, Commission on Higher Education

National Education Association: PAUL E. SMITH, Secretary, Committee on International Relations

Phelps-Stokes Fund: F. D. PATTERSON, Director

Social Science Research Council: BRYCE WOOD, Staff Associate

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United States National Student Association: DONALD F. CLIFFORD, Project Director, Foreign Student Leadership Project

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Canada–United States Committee on Education

Executive Committee

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F. K. STEWART, Executive Secretary, Canadian Education Association

Representing the Canadian Education Association

O. J. DESAULNIERS, Superintendent of Education, Department of Education, Province of Quebec
F. E. MACDIARMID, Chief Director and Deputy Minister of Education, Department of Education, Saskatchewan

Representing the Canadian Teachers Federation

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J. WARREN NYSTROM, Secretary, United States Section, Canada–United States Committee, Chamber of Commerce of the U.S.A.

Committee for Educational Liaison Between the United States and the Countries of Sub-Sahara Africa

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CORNELIS W. DE KIEWIET, President, University of Rochester
CLIFFORD M. HARDIN, Chancellor, University of Nebraska
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Committee on Leaders and Specialists

Terms expiring December 31, 1961

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